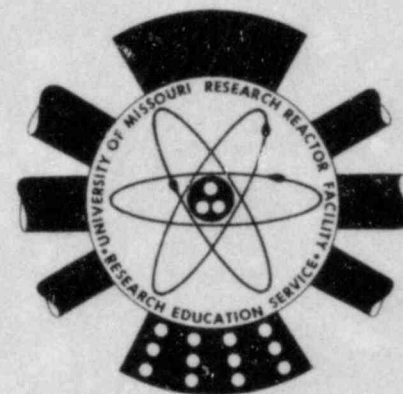




**UNIVERSITY OF MISSOURI  
RESEARCH REACTOR (MURR)**

**ANNUAL REPORT**

**JULY 1981 - JUNE 1982**



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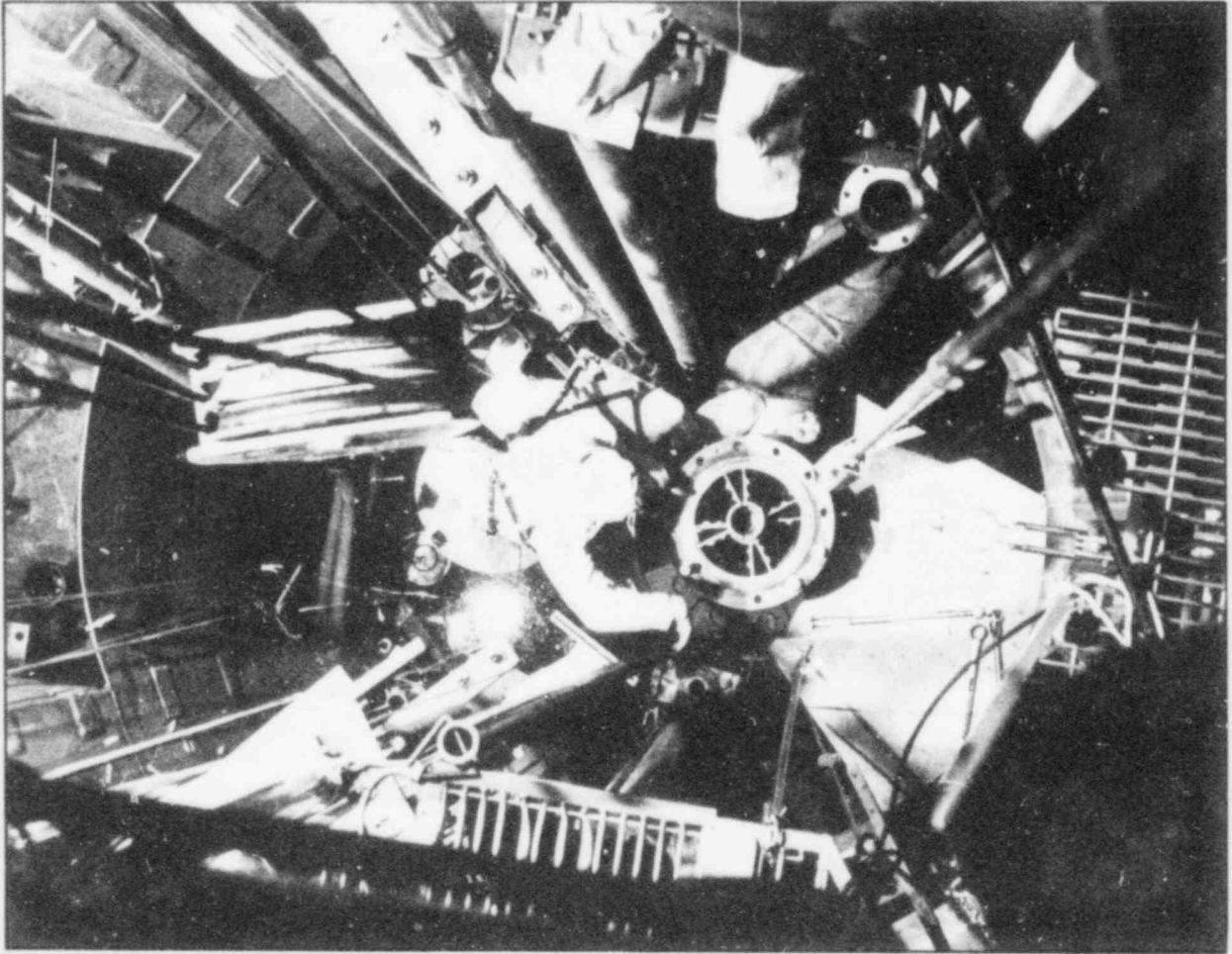
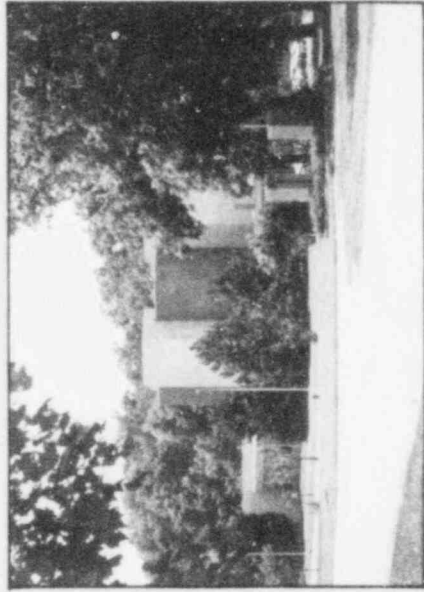
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# MURR

The Building



The Core



MURR is the University of Missouri Research Reactor Facility.

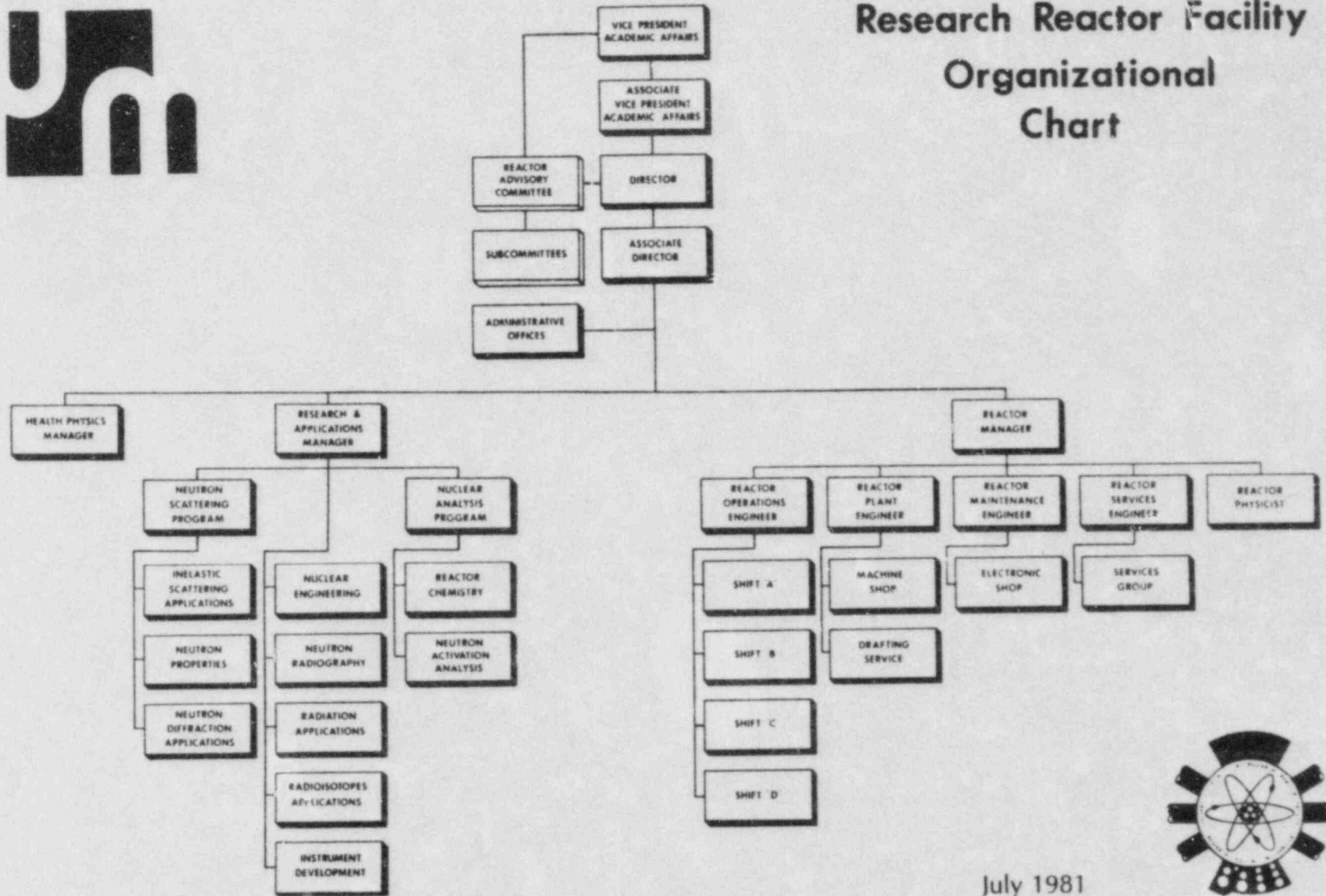
MURR is a source of Neutron and Gamma Radiation.

MURR is the Highest Flux and Highest Power steady state reactor at a U.S. University.

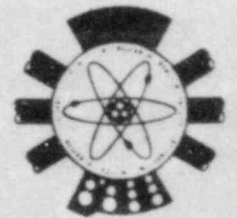
MURR's purpose is to support Education, Research, and Service.



# Research Reactor Facility Organizational Chart



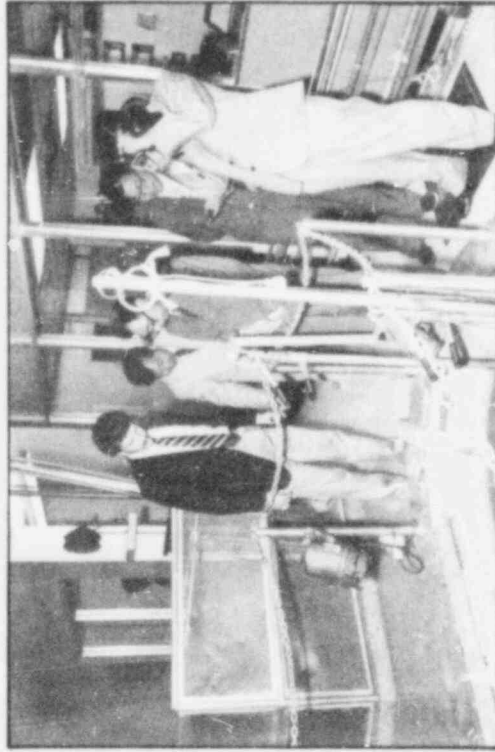
July 1981



# EDUCATION

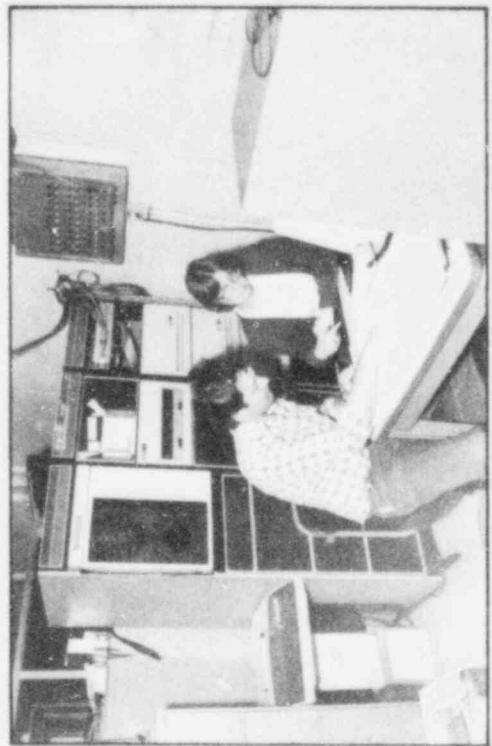


Faculty Member presents an over-view of research in progress at MURR to Anhui Delegation.



Reactor Manager describes experimental facilities to visiting Delegation.

Post-Doctoral Fellow discusses sample results with physics student from the University of Arizona.



## **EDUCATION**

Supported by MURR — July 1981 - June 1982

- Tours for 2,356 people
- Speakers for 102 seminars, colloquia, and talks
- Lectures for 24 class hours
- 8 instructors for 29 credit hours of courses



MURR TOURS -- JULY 1981 - JUNE 1982

UNIVERSITY OF MISSOURI AFFILIATION	570
SECONDARY SCHOOLS (HIGH SCHOOL, JR. HIGH, ETC.)	833
OTHER UNIVERSITIES	295
WALK IN	266
PROFESSIONAL ORGANIZATIONS	392
TOTAL	<hr/> 2,356

SPECIAL TOURS

SEPTEMBER 3, 1981 - NRC MANAGEMENT MEETING, 4 TOURED.  
NOV. 6, 1981 - ACS REGIONAL MEETING, 14 TOURED  
MARCH 16, 1982 - KENYA, SOUTH AFRICA DELEGATION, 6 TOURED.  
APRIL 2, 1982 - ANS MEETING, 130 TOURED.  
APRIL 20, 1982 - CHINESE ANHUI DELEGATION, 6 TOURED.  
MAY 17, 1982 - UMC-PHYSICS DEPARTMENT REVIEW COMMITTEE, 2 TOURED.  
JUNE 9, 1982 - INSTITUTE OF ATOMIC ENERGY, BEIJING CHINA, 6 TOURED.

INTERNATIONAL VISITORS -- JULY 1981 - JUNE 1982

ARGENTINA

AUSTRIA

BRAZIL

BELGIUM

CANADA

CHINA

CZECHOSLOVAKIA

DENMARK

EGYPT

FEDERAL REPUBLIC of GERMANY

FRANCE

GHANA

INDIA

IRAN

ISRAEL

JAPAN

KOREA

LUXEMBURG

MEXICO

NETHERLANDS

PAPUA NEW GUINEA

PEOPLES REPUBLIC of CHINA

PORTUGAL

PUERTO RICO

SPAIN

SOUTH AFRICA

UNITED KINGDOM

YUGOSLAVIA

SEMINARS, COLLOQUITA, TALKS BY MURR STAFF -- JULY 1981 - JUNE 1982

<u>DATE</u>	<u>SPEAKER</u>	<u>TITLE OF TALK</u>	<u>WHERE PRESENTED</u>
07/81	R. Cobean	The University of Missouri Obsidian Project: Recent Surveys of Ancient Mexican Obsidian Mines	MURR
07/81	Y. Fujita	Kyoto University Research Reactor	MURR
07/81	Y. Fujita	Neutron Cross Section Measurements Using Accelerator-Based Filtered Beams	MURR
07/81	W. Yelon	Industrial Applications of Neutron Scattering	Science Applications International, San Diego, CA
07/81	W. Yelon	Crystallographic Applications of HgI <sub>2</sub>	U. of California, Santa Barbara, CA
07/81	W. Yelon	Neutron Scattering Studies of V <sub>2</sub> O <sub>3</sub>	Los Alamos Scientific Lab, Los Alamos, NM
07/81	W. Yelon	Small-Angle Neutron Scattering at MURR	IBM, San Jose, CA
07/81	S. Morris	Trace Element Comparison of Human Milk, Market Milk and Commercial Infant Formula	Adult Education Program, Strawn School, Columbia, MO
07/81	H. Anderson	Trace Element Comparison of Human Milk, Market Milk and Commercial Infant Formula	UMC School of Nursing
07/81	S. Morris	Trace Element Comparison of Human Milk, Market Milk and Commercial Infant Formula	UMC School of Nursing
07/81	H. Anderson	Trace Element Comparison of Human Milk, Market Milk and Commercial Infant Formula	Boone Clinic, Columbia, MO
07/81	S. Werner	Magnetic Excitations in Chromium	Gordon Research Conference, Holderness, MA
07/81	S. Werner	Magnetic Neutron Scattering	IPNS Faculty Institute Argonne, National Laboratory, Argonne, IL

SEMINARS, COLLOQUIA, TALKS BY MURR STAFF -- JULY 1981 - JUNE 1982

<u>DATE</u>	<u>SPEAKER</u>	<u>TITLE OF TALK</u>	<u>WHERE PRESENTED</u>
08/81	S. Werner	Magnetic Excitations of the Spin Density Wave in Chromium	Argonne National Laboratory, Argonne , IL
08/81	H. Anderson	Trace Element Comparison of Human Milk, Market Milk and Commercial Infant Formula	Boone Clinic, Columbia, MO
08/81	H. Anderson	Trace Element Comparison of Human Milk, Market Milk and Commercial Infant Formula	Adult Education Program, Strawn School Columbia, MO
08/81	O. Olson	Description of Radioactive Waste	Missouri Radioactive Waste Commission, MURR
08/81	D. Alger	Research at MURR	Union Electric Company, MURR
08/81	T. Baxter	Forensic Neutron Activation Analysis	Boone County Task Force Against Sexual Assault Columbia, MO
08/81	M. Glascock	Compton Suppression Techniques	MURR
09/81	W. Yelon	Condensed Matter Research at MURR	UMC-Physics
09/81	R. Berliner	Accelerator Based Analysis of Materials	UMC-Materials Engineering Seminar
09/81	S. Langhorst	Waste Water Analysis at MURR	MURR
09/81	S. Langhorst	Review of Reactor Chemistry Program	Reactor Advisory Committee, MURR
09/81	J. Vogt	Neutron Activation Analysis of Meso-american Obsidian	University of Maryland-Dept. of Chemistry, College Park, MD
10/81	J. Meese	Deep Levels in Irradiated Semiconductors	UMC-Physics
10/81	W. Yelon	Gamma-Ray Scattering: A New Technique in Solid State Physics	Rice University -Physics, Houston, TX
10/81	G. Ehrhardt	Radioisotope Applications at MURR	UMC-Radiochemistry



SEMINARS, COLLOQUIA, TALKS BY MURR STAFF -- JULY 1981 - JUNE 1982

<u>DATE</u>	<u>SPEAKER</u>	<u>TITLE OF TALK</u>	<u>WHERE PRESENTED</u>
10/81	A. Krawitz	Binder Deformation Mechanisms and Mechanical Behavior of WC-Co and WC-(Co, Ni) Cemented Carbides	Reed Rock Bit Company, Houston, TX
10/81	H. Taub	Structure of Monolayer and Bilayer $^4\text{He}$ Films Adsorbed on Graphite	Université d' Aix-Marseille, France
10/81	H. Taub	Structure of Monolayer and Bilayer $^4\text{He}$ Films Adsorbed on Graphite	Université de Bucem France
10/81	D. Luckey	Beneficial Effects of Ionizing Radiation	Reed College, Portland, OR
10/81	D. Luckey	Beneficial Effects of Ionizing Radiation	Post. Graduate Seminar, Richland, WA
10/81	D. Luckey	Beneficial Effects of Ionizing Radiation	Stanford Univ. Palo Alto, CA
10/81	D. Luckey	Beneficial Effects of Ionizing Radiation	Electric Power Research Institute, Palo Alto, CA
10/81	D. Luckey	Beneficial Effects of Ionizing Radiation	25th Ann. Western Occupational Health Conference
11/81	H. Taub	Structure of Monolayer and Bilayer $^4\text{He}$ Films Adsorbed on Graphite	Institut Laue-Langevin, Grenoble
11/81	W. Yelon	Gamma-Ray Scattering: A New Technique in Solid State Physics	Purdue University, West Lafayette, IN
11/81	R. Berliner	Instrument Development at MURR	UMC-Nuclear Engineering
11/81	R. Cobean	Ancient Mexican Obsidian Mining and Trade	Harvard University Peabody Museum of Archaeology and Ethnology, Cambridge, MA
11/81	R. Cobean	University of Missouri Mesoamerican Obsidian Project	Yale University Department of Anthropology New Haven, CT

SEMINARS, COLLOQUIA, TALKS BY MURR STAFF -- JULY 1981 - JUNE 1982

<u>DATE</u>	<u>SPEAKER</u>	<u>TITLE OF TALK</u>	<u>WHERE PRESENTED</u>
11/81	R. Cobean	Recent Result of the Quarry Surveys and Trace Elements Analysis Program of the University of Missouri Mesoamerican Obsidian Project	M.I.T. Center for the Study of Archaeological Materials, Boston, MA
11/81	V. Vogt	Chemical Composition of Market Milk and Infant Formula in the U.S.	Inter-University Reactor Institute, Delf, The Netherlands
11/81	V. Vogt	Background Reduction Using a Compton Suppression System	NBS-Activation Analysis Section
11/81	G. Ehrhardt	Simple Extrapolations of Exponential Decay and Growth of Radioactive Materials	UMC-Dairy Science
12/81	A. Pringle	Small-Angle Neutron Scattering from Rubber-Plastic Polymer Blends	UMC-Physics
12/81	D. Alger	Research Programs at MURR	UMC-Nuclear Engineering
12/81	W. Yelon	Gamma-Ray Scattering: Applications to Condensed Matter Science	Brookhaven National Laboratory, Upton, L.I., New York
12/81	O. Olson	Radiation Instruments Used at MURR	MURR
01/82	W. Yelon	Unique Scattering Techniques at MURR	Exxon Research & Engineering, Linden, NJ
01/82	M. Prelas	The Missouri Mirror Fusion Project	UMC-Nuclear Engineering
01/82	M. Prelas	The Missouri Research and Educational Fusion Facility	UMC-Physics
01/82	C. McKibben	Careers Associated with Nuclear Research	West Jr. High, Columbia, MO
01/82	D. Alger	What is an Engineering Career	West Jr. High, Columbia, MO
01/82	D. Alger	Neutron Radiography	UMC-Materials Engineering Seminar
01/82	S. Werner	Spin Density Wave in Chromium	University of Toronto - Physics

SEMINARS, COLLOQUIA, TALKS BY MURR STAFF -- JULY 1981 - JUNE 1982

<u>DATE</u>	<u>SPEAKER</u>	<u>TITLE OF TALK</u>	<u>WHERE PRESENTED</u>
01/82	S. Werner	Gravity and Inertia in Quantum Mechanics	National Research Council, Ottawa, Canada
01/82	S. Werner	Spin Density Waves in Chromium	National Research Council, Ottawa, Canada
02/82	W. Yelon	Gamma-Ray Scattering: A New Technique in Condensed Matter Science	National Bureau of Standards, Gaithersburg, MD
02/82	E. Desa	Neutron Diffraction Studies of Glass Systems	UMC-Physics
02/82	W. Yelon	Gamma-Ray Scattering: A New Technique in Condensed Matter Science	Oak Ridge National Laboratory, Oak Ridge, TN
02/82	D. Luckey	Beneficial Effects of Ionizing Radiation	Argonne National Laboratory, Argonne, IL
02/82	S. Langhorst	Missouri Women in Energy	Missouri Farm Electrification Council, Columbia, MO
02/82	H. Anderson	Trace Element Comparison of Human Milk, Market Milk and Commercial Infant Formula	Stephen College Math Club-Hyphtia Hexagon Mtg., Columbia, MO
02/82	D. Mildner	Materials Research Using Small-Angle Neutron Scattering	UMC-Materials Engineering Seminar
02/82	D. Alger	Research Programs at MURR	Columbia Kiwanis Club
02/82	R. Cobean	Status of the University of Missouri Mesoamerican Obsidian Project	MURR
02/82	M. Glascock/ J. Carni/ S. Morris	Computer-Based Gamma Ray Spectroscopy Power Plant Application	MURR
02/82	V. Flynn/ S. Morris	The Determination of Selenium in the Pituitary Gland and its Hormones	MURR

SEMINARS, COLLOQUIA, TALKS BY MURR STAFF -- JULY 1981 - JUNE 1982

<u>DATE</u>	<u>SPEAKER</u>	<u>TITLE OF TALK</u>	<u>WHERE PRESENTED</u>
02/82	J. Vogt	Trace Element Studies of Mesoamerican Obsidian	NBS-Inorganic Analytical Research Division, Gaithersburg, MD
03/82	O. Olson	Know Your Isotopes	National Fishery Research Laboratory Columbia, MO
03/82	D. Mildner	Materials Research Using Small-Angle Neutron Scattering	University of Wisconsin, Madison- Materials Science Center
03/82	P. Hall	Quasi-Elastic Neutron Scattering Studies of the Mobility of Water in Montmorillonite Clays	UMC-Physics, Condensed Matter Seminar
03/82	H. Taub	Neutron Scattering Studies of the Structure and Dynamics of Adsorbed Hydrocarbons	Technical University of Denmark, Lyngby, Denmark
03/82	M. Glascock	Use of PGNAAs to Analyze Museum Artifacts	Washington University-Physics
03/82	W. Yelon	Scattering Studies With High Intensity Mössbauer Radiation	Los Alamos Scientific Laboratory, Los Alamos, NM
03/82	M. Glascock	Nuclear Archaeometry	Washington Univ. St. Louis, MO
03/82	C. Graham	Analysis of Obsidian Via NAA	UMC Nuclear Engineering
03/82	S. Langhorst	Radioiodine Monitoring	UMR Nuclear Engineering
03/82	A. Duchemin	Analysis of P-32 in Pool Water at the MURR	MURR
04/82	M. Liebel	Inhibition of the soluble Guanylate Cyclase from Rat Lung by Sulfated Polyanions	UMC Biochemistry
04/82	A. Krawitz	Cemented Carbide Composite Materials: Binder Deformation and Mechanical Response	UMC-Physics



SEMINARS, COLLOQUIA, TALKS BY MURR STAFF -- JULY 1981 - JUNE 1982

<u>DATE</u>	<u>SPEAKER</u>	<u>TITLE OF TALK</u>	<u>WHERE PRESENTED</u>
04/82	M. Prelas	Elmo Bumpy Torus Physics and Potential Contributions of the Missouri Mirror	UMC-General Engineering Seminar
04/82	Y. Fujita	Cross Section Measurements of Thorium Using Filtered Neutrons	MURR
04/82	D. Mildner	Materials Research Using Small-Angle Neutron Scattering	UMR-Metallurgical and Nuclear Engineering
04/82	M. Prelas	Change of Pace: Fusion Energy Research	Industrial Relations Council
05/82	G. Schupp	High Intensity Mössbauer Gamma-Ray Diffractometer	UMC-Physics
05/82	M. Yethiraj	Phonons and Spin Waves in Vanadium Sesquioxides	UMC-Physics
05/82	R. Berliner	Neutron Pendellosung Interference Measurements in Si and InSb	UMC-Physics
05/82	D. Mildner	Materials Research Using Small-Angle Neutron Scattering	UMC-Physics
05/82	O. Olson	Low-Level Radwaste Disposal	Channel 9 TV, St. Louis, MO
05/82	D. Trokey	The Effects of Dead Cells on Living Spermatozoa	UMC Dairy Science
05/82	T. Spalding/ M. Glascock	A Trace Element Study in Coal and Coal-derived Solids by Neutron Activation Techniques	MURR
05/82	W. Yelon	Neutron Scattering at MURR	Northern Europe Neutron Scatterers, Delft, Netherlands

## SEMINARS, COLLOQUIA, TALKS BY MURR STAFF -- JULY 1981 - JUNE 1982

<u>DATE</u>	<u>SPEAKER</u>	<u>TITLE OF TALK</u>	<u>WHERE PRESENTED</u>
05/82	C. Callahan/ H. Anderson	The Determination of Selenium in Human Milk, Market Milk and Commercial Infant Formula	MURR
05/82	C. Kanatzar	The Determination of Br, Ca, Cl, K, Mg and Na via Neutron Activation Analysis in Human Milk and Commercial Infant Formula	MURR
05/82	W. Yelon	$\gamma$ -Ray Scattering: A New Technology for Solid State Science	Northern Europe Neutron Scatterers, Petten, Netherlands
06/82	F. Ross	Introduction to Diffraction Methods	Faculty Institute, Argonne National Laboratory, Argonne, IL
06/82	R. Berliner	Neutron Dynamical Diffraction Effects in Si and InSb	Los Alamos National Laboratory, Los Alamos, N.M.
06/82	W. Yelon	Gamma Ray Scattering at MURR	Hahn-Meitner Institute, Berlin, Germany
06/82	W. Yelon	Neutron Scattering at MURR - Facilities, Science and Support	Hahn-Meitner Institute, Berlin, Germany
06/82	W. Yelon	Scattering Studies with Intense $\gamma$ -rays	ILL Seminar, Grenoble, France

COURSE LECTURES AND LABS PRESENTED BY MJRR STAFF -- JULY 1981 - JUNE 1982

<u>DATE</u>	<u>LECTURER</u>	<u>COURSE, TITLE OR SUBJECT OF LECTURE</u>	<u>UNIVERSITY &amp; DEPARTMENT</u>
07/81	S. Morris/ T. Baxter/ S Schlegel	Introduction to Biochemistry Biochemistry 10	UMC-Biochemistry
08/81	S. Morris/ J. Carni/ M. Glascock	Computer-Based Gamma-Ray Spectroscopy	Union Electric
09/81	R. Berliner	Semiconductor Theory Engineering 384	UMC-Mechanical and Aero- space Engineering
10/81	C. Graham	Nuclear Radiation Detection Nuclear Engineering 391	UMC-Nuclear Engineering
10/81	H. Anderson	General Chemistry Chemistry 111	Stephens-Science Dept.
10/81	S. Langhorst	Nuclear Radiation Detection Nuclear Engineering 391	UMC-Nuclear Engineering
11/81	S. Morris	Trace Element Analysis Biochemistry 310	UMC-Biochemistry
11/81	S. Morris	Instrumental Analysis Chemistry 312	UMC-Chemistry
11/81	T. Baxter	Trace Element Analysis Laboratory Biochemistry 310	UMC-Biochemisry
11/81	J. Carni	Instrumental Analysis Laboratory Chemistry 312	UMC-Chemistry
11/81	W. Meyer	Technical Specification Nuclear Engineering 355	UMC-Nuclear Engineering

COURSE LECTURES AND LABS PRESENTED BY MURR STAFF -- JULY 1981 - JUNE 1982

<u>DATE</u>	<u>LECTURER</u>	<u>COURSE, TITLE OR SUBJECT OF LECTURE</u>	<u>UNIVERSITY &amp; DEPARTMENT</u>
11/81	D. McGinty	Standard Operating Procedure Nuclear Engineering 355	UMC-Nuclear Engineering
11/81	C. McKibben	Federal Code of Regulation Concerning Nuclear Power - Nuclear Engineering 355	UMC-Nuclear Engineering
11/81	S. Langhorst	Nuclear Radiation Detection Nuclear Engineering 391	UMC-Nuclear Engineering
12/81	C. Graham	Nuclear Radiation Detection Nuclear Engineering 391	UMC-Nuclear Engineering
12/81	A. Krawitz	Neutron Powder Diffraction Demonstration	Advanced Chemistry Rockbridge High School Columbia, Mo.
02/82	M. Glascock	Advanced Physics Laboratory Physics 306	UMC-Physics
02/82	F. Ross	Single-Crystal Camera Methods Mechanical and Aerospace Engineering 334	UMC-Mechanical and Aero- space Engineering
02/82	M. Glascock	Gamma-Ray Spectroscopy Physics 306	UMC-Physics
03/82	M. Glascock	General Physics Physics 123	UMC-Physics
04/82	S. Langhorst	Introduction to Nuclear Engineering Nuclear Engineering 355	UMC-Nuclear Engineering
04/82	W. Goeckeler	Radiochemistry Chemistry 361	UMC-Chemistry

COURSE LECTURES AND LABS PRESENTED BY MURR STAFF -- JULY 1981 - JUNE 1982

<u>DATE</u>	<u>LECTURER</u>	<u>COURSE, TITLE OR SUBJECT OF LECTURE</u>	<u>UNIVERSITY &amp; DEPARTMENT</u>
05/82	W. Goekeler/ G. Ehrhardt	Research Activities at MURR	UMC-Radiochemistry
05/82	S. Morris J. Carni	Radiochemistry	SWMSU/Chemistry



COURSES AND LABS TAUGHT BY MURR STAFF -- JULY 1980 - JUNE 1981

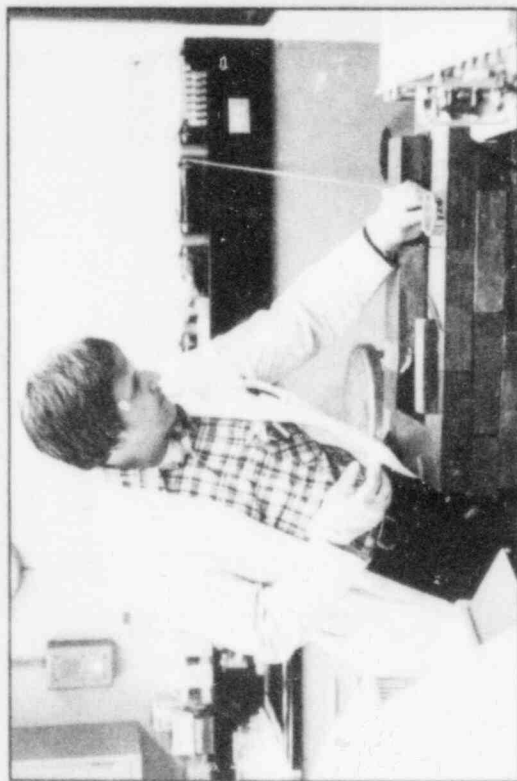
<u>STAFF MEMBER</u>	<u>COURSE TITLE AND NUMBER</u>	<u>COURSE HOURS</u>	<u>NUMBER OF STUDENTS</u>
J. Meese	Electrical Engineering 443, Solid State Theory	3	12
D. Alger/W. Miller	Nuclear Engineering 355, Reactor Laboratory	3	6
S. Morris	Chemistry 5, Chemistry for Engineers	5	165
S. Morris	Chemistry 150, Undergraduate Research	3	3
M. Glascock	Chemistry 150, Undergraduate Research	3	20
D. Mildner	Physics 124, Electromagnetism and Optics	3	60
R. Berliner	Physics 124, Electromagnetism and Optics	3	20
J. Farmer	Physics 123, University Physics II	6	45

# RESEARCH

Visiting Professor from Kyoto University measures neutron cross sections.



Graduate Student from Ghana works on the development of a neutron gamma-ray radiation monitor.



Faculty member analyzes the trace element content in human milk and infant formula.

## RESEARCH

Supported by MURR — July 1981 - June 1982

- Supported the research of 151 faculty and 73 graduate students from 22 departments of the University of Missouri and 27 other universities.
- Supported the research leading to 116 journal publications from the University of Missouri and other universities.
- Supported research leading to 84 papers presented at professional meetings.
- Supported research leading to the granting of 12 Ph.D. degrees and 9 master's degrees.
- Provided the financial support for 18 faculty (16.5 FTE), 33 graduate students (20.78 FTE) and 38 undergraduate students (25 FTE).
- Secured research equipment worth \$176,238 by gifts, loans and grants and worth \$60,341 by purchases from MURR funds.
- Supported 36 grants and contracts totaling \$257,711.
- Supplied 146 shipments of 37 different isotopes.
- Made 8 neutron radiographs for 6 students and faculty from 2 departments.
- Samples analyzed: 1,760 samples from 44 in-pool irradiations; 19,201 from 12,966 pneumatic tube irradiations; and 841 via prompt gamma neutron activation analysis for a total of 21,802.

MURR SUPPORTED RESEARCH -- JULY 1981 - JUNE 1982

<u>UNIVERSITY &amp; DEPARTMENT</u>	<u>FACULTY/MURR STAFF</u>	<u>STUDENTS</u>	<u>TITLE OR BRIEF DESCRIPTION OF RESEARCH</u>
Argonne National Laboratory	J. Meese		Semiconductor Radiation Damage Experiments for IPNS
UMC-Chemistry	E. Schlemper/S. Hussain, F. Ross		X-Ray/Neutron Diffraction Studies to Model Electron Density Distributions in Dihydroxybenzophenone
UMC-Physics	J. Xu/S. Werner, R. Berliner	M. Arif	Research on Gravitational and Magnetic Field Effects on the Dynamical Diffraction of Neutrons
UMC-Museum of Art and Archaeology	M. Cornman/M. Glascock	T. Spalding	Analyses on Ancient Roman Coins and Medical Instruments by PGNA
Texas A&M	D. James/M. Glascock	T. Spalding	Analysis of Horse Feces Samples Containing Stable Rare Earth Tracers Utilizing PGNA
Monsanto Corporation	B. Stone/M. Glascock	T. Spalding	Neutron Activation Analysis Performed on Silicon Samples
UMC-Physics/Israel Institute of Technology Universitaire d' Aix-Marseille	H. Shechter, H. Taub, J. Suzanne	R. Wang	Study of Structure and Phase Transitions of Fe(CO) <sub>5</sub> Monolayers Using the Multidetector at C Port
UMC-Physics/Israel Institute of Technology Universitaire d' Aix-Marseille	H. Taub, H. Shechter, H. Danner, F. Hansen, J. Suzanne	R. Wang	Study of the Dynamics of Ethane and Butane Monolayers on 3XE
UMC-Nuclear Engineering	W. Miller	J. Sohl	Health Physics Neutron Spectrometer
UMR-Materials Research	T. Van Schalkwyk/ W. Yelon		Testing the Effect of Stoichiometry on Magnetic Properties Using Samples of Y <sub>6</sub> Mn <sub>x</sub>

MURR SUPPORTED RESEARCH -- JULY 1981 - JUNE 1982

<u>UNIVERSITY &amp; DEPARTMENT</u>	<u>FACULTY/MURR STAFF</u>	<u>STUDENTS</u>	<u>TITLE OR BRIEF DESCRIPTION OF RESEARCH</u>
UMC-Physics	C. Tompson/F. Ross	M. Yethiraj	Design of Large-Computer Based Least-Squares Models to Further Study the Complex Magnetism of TbB <sub>4</sub>
UMC-Chemistry	S. Manahan/M. Glascock	T. Spalding	Analyses of Coal Samples Using the PGNAF Facility
Mallinckrodt	H. Anderson/M. Glascock		Analysis of a Stannous Sulfur Colloid by Use of PGNAF
UMC-Nuclear Engineering (Medical Physics)	W. Kennedy/R. Berliner/ M. Glascock	C. Ikoro	Tomographic Images of Neutron Activation
MURR/UMC-Nuclear Engineering	D. Alger	J. Lindsay	Comparison of Possible Neutron Scintillator Screens to a LiF/ZnS Commercial Screen
MURR/UMC-Nuclear Engineering	D. Alger	J. Lindsay	Development of Image Contrast Enhancement and Stretching Routines
UMC-Electrical Engineering	J. Meese/J. Farmer	J. Nugent	Testing of Fast Current Amplifier Designs for Use in Transient Current Spectroscopy (TCS) Experiments
UMR-Chemistry	Y. Yang/W. Yelon	C. Crowder	Structural and Magnetic Properties of Y(Fe <sub>x</sub> Al <sub>1-x</sub> ) <sub>12</sub>
UMC-Physics/Purdue-Chemistry	S. Werner/ J. Honig/ W. Yelon	M. Yethiraj	Neutron Scattering Studies of Transition Metal Sesquioxides
Univ. of Illinois/MURR	W. Williams/R. Berliner		Reitveld Powder Refinement of the Defect Structures of the Transition Metal Carbides
UMC-Computing Center/MURR	G. Moum/J. Sudol R. Berliner		New Software for the Interferometer Interface

MURR SUPPORTED RESEARCH -- JULY 1981 - JUNE 1982

<u>UNIVERSITY &amp; DEPARTMENT</u>	<u>FACULTY/MURR STAFF</u>	<u>STUDENTS</u>	<u>TITLE OR BRIEF DESCRIPTION OF RESEARCH</u>
UMC-Computing Center/MURR	G. Moum/R. Berliner		New Version of the Neutron Diffractometer Control System
UMC-Mechanical Engineering	A. Krawitz	S. Gegg	A Study of Cryogenically Treated WC-C <sub>0</sub> Cutting Tool Materials
MURR	M. Glascock	T. Spalding	Analyses of Two NBS Standard Reference Materials (NBS-278 Obsidian and NBS-B2 Basalt) by Use of PGNAA
Monsanto Corporation	D. Hill/M. Glascock		Analysis by NAA of Silicon Wafers to Determine Gold Content and Relative Compositions for Other Elements
Louisiana Tech	R. Thompson/M. Glascock		Use of PGNAA Data on Boron Analyses of Coal Mining Spoils at a Restoration Site
MURR	J. Farmer		New Trigger Scheme Devised and Implemented for DLTS Using the Boxcar Internal Trigger
UMC-Mechanical Engineering	A. Krawitz/F. Rose	G. Haley	Systematic Structure Study of (Ti/V)C Carbides
McDonnell-Douglas	A. Lind/E. Desa		Cross-Linked Densities of Epoxy Resins
MURR	J. Farmer		Detailed Planning of Positron Annihilation Experiments
Medical Foundation of Buffalo, SUNY Buffalo	B. Moss, P. Coppens/ F. Ross, W. Yelon	R. Alkire	Absolute Structure Factors in Vanadium
MURR/UMC-Nuclear Engineering	D. Alger	J. Lindsay	Measurements of Characteristic Curves and Modulation Transfer Functions for Neutron Radiography Screens



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<u>UNIVERSITY &amp; DEPARTMENT</u>	<u>FACULTY/MURR STAFF</u>	<u>STUDENTS</u>	<u>TITLE OR BRIEF DESCRIPTION OF RESEARCH</u>
UMC-Physics	R. Berliner	M. Arif	Model Calculations of Dynamical Neutron Diffraction Effects
Pittsburgh-Chemistry	W. Wallace/W. Yelon		Studies of $ZrMn_2Co_8$ and $ZrMn_2Fe_8$ at Low Temperatures
UMC-Physics	G. Schupp/G. Ehrhardt	W. Goekeler	Method to Separate Carrier Free Co-58 from a Nickel Target
UMC-Animal Resources/ Nuclear Engineering (Medical Physics)	J. Lenz/G. Ehrhardt W. Kennedy	W. Goekeler	Experimentation with Solutions of Human Serum Albumin and Dextran for Producing Viscous Carrier Media for Injecting Silicon-Phosphorus Microspheres
UMC-Physics	J.-A. Xu/F. Ross		Search for Crystalline $D_2$ Reflections from a Sample in a Diamond Cell (70k bar pressure)
MURR/UMC-Nuclear Engineering	W. Miller	S. Growcock	Study of Neutron Survey Meter Calibrations for MURR Meters
MURR/UMC-Nuclear Engineering	M. Prelas	A. Chung M. Peck	The Dynamics of Chemical Synthesis Mechanisms Under the Influence of Radiation
UMC-Museum of Art and Archaeology	M. Cornman/M. Glascock		Analysis of Seventeen Museum Objects and Coins by PGNA
Monsanto Corporation	D. Hill/M. Glascock		Analysis of Gold by NAA in Silicon Wafers
Washington University	N. Sturchio/M. Glascock	T. Spalding	Analysis of Twenty Samples of Metamorphic Granites from Egypt
UMC-Physics	G. Schupp/W. Yelon	L. Crow	TDS Separation in Si and LiF
UMC-Chemistry	F. Ross	W. Pearson	Studies of Gamma-ray Diffraction Methods for X-ray/Neutron/Gamma-ray Analysis of Electron Density

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<u>UNIVERSITY &amp; DEPARTMENT</u>	<u>FACULTY/MURR STAFF</u>	<u>STUDENTS</u>	<u>TITLE OR BRIEF DESCRIPTION OF RESEARCH</u>
MURR	Y. Fujita		Measurements of Elastic and Inelastic Neutron Cross Sections of Th-232 Using Si-filtered 144keV Neutrons
MURR	Y. Fujita		Measurements of Self-Shielding Effect in Total Cross Section of Th-232 for 55 and 144keV Neutrons
MURR	Y. Fujita		Doppler Effect Measurements of Th and ThO <sub>2</sub> Using Iron-Filtered Neutrons
UMC-Nuclear Engineering	M. Prelas	M. Peck	Development of Gas Sampling Capabilities for the University of Missouri Research Reactor's Nuclear Pumping Facility
MURR/UMC-Electrical Engineering	R. Berliner/ J. Sudol		Implementation of a Prototype PSD Circuit Using 10 Bit ADCS From the Nucleus, Inc.
Monsanto Corporation	J. Schaeffer, M. Sefcik/ E. Desa, W. Yelon		Small-Angle Neutron Scattering Measurements on Polycarbonates
DuPont	M. Wolfe/E. Desa, W. Yelon		SANS Data on Poly(ethyleneterephthalate) Fibers
Exxon Research and Engineering	J. Gethner/H. Kaiser		Small-Angle Neutron Scattering Measurements on Coal Samples
Exxon Research and Engineering	R. Beyerlein/ D. Mildner	D. Liu	Small-Angle Neutron Scattering Measurements on Asphaltene Colloid Samples
UMC-Physics	G. Schupp/W. Yelon	L. Crow	Determination of $\sigma_D$ in Ta and W and of the Resonant Cross Section of <sup>183</sup> W
UMR-Metallurgical Engineering	P. Leighly/D. Mildner	I. Ukpong	Small-Angle Neutron Scattering Measurements on Irradiated Steel Samples

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<u>UNIVERSITY &amp; DEPARTMENT</u>	<u>FACULTY/MURR STAFF</u>	<u>STUDENTS</u>	<u>TITLE OR BRIEF DESCRIPTION OF RESEARCH</u>
University of Illinois-Metallurgical and Mining Engineering	H. Chen/D. Mildner		Precipitate Growth in Soda-Silica-Iron Glasses as a Function of Annealing Time and Temperature
University of Wisconsin-Materials Science Center	D. Larbalaster/ D. Mildner	W. Warnes	Precipitates in Niobium-Titanium Superconducting Wires Studied Using SANS
UMR-Materials Research Center	D. Day/D. Mildner		Inhomogeneities in Soda Glasses
UMC-Veterinary School	T. Goetz/M. Glascock		Analysis of K in Horse Muscle Tissue Samples
Monsanto Corporation	D. Hill/M. Glascock		Analysis of Thirty Silicon Wafers to Determine Au, Cu and La
Harris Semiconductor	C. Messmer/M. Glascock		Analysis of Five Silicon Wafers to Measure Au and Cu
Purdue-Chemistry	J. Honig/F. Ross/W. Yelon		Study of the Low-temperature (8-50K) Magnetic Structure of Oxygen-Rich $V_2O_3$ .
MURR	R. Berliner, J. Litton		Implementation of the RMS Software Package for Handling Health Physics Records
UMC-Chemistry	F. Ross	W. Pearson	Gamma-Ray Data Collection for $K_2CrO_4$ Electron Density Studies
Hahn-Meitner Institute	J. Schneider/W. Yelon, F. Ross	W. Pearson. R. Alki	Gamma-Ray Diffraction Studies of Plastically Deformed Silicon Crystals
Phillips Petroleum Co.	R. Borst./P. Hall D. Mildner	D. Liu	Measurements of the Pore Size Distributions in Oil Shales by SANS

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<u>UNIVERSITY &amp; DEPARTMENT</u>	<u>FACULTY/MURR STAFF</u>	<u>STUDENTS</u>	<u>TITLE OR BRIEF DESCRIPTION OF RESEARCH</u>
Bell Labs	A. Filo/M. Glascock		Analysis of Polysilicon Samples
Argonne National Laboratory	T. Brun/F. Ross		Tests of LiAl Diffraction Intensities Using MUGS
UMC-Mechanical Engineering MURR	A. Krawitz/F. Ross J. Farmer	C. Bryan	Texture Studies Using Neutrons Completion of Transient Current Spectrometer; Measured $\tau_{max}$ 1-5 $\mu$ sec
UMC-Physics	R. Berliner	M. Arif	Neutron Pendellosung Interference Effects for InSb
MURR	R. Berliner/J. Sudol		Construction of Six Stepper Motor Drive Power Supplies
Schlumberger Well Services	D. Steinman/M. Glascock	T. Spalding	Analysis of 200 Samples of Mock Oil Well Cores Using the PGNAA Facility
UMC-Engineering	J. Baldwin/M. Glascock, S. Morris	T. Spalding	Analysis of Fly Ash and Concrete Aggregate Samples by PGNAA and INAA
Hahn Meitner Institute	J. Schneider/W. Yelon	W. Pearson	Absolute and Relative Structure Factors in Beryl- lium
General Electric	J. Trice/M. Glascock	T. Spalding	Analysis of Fuel Reprocessing Samples by PGNAA to Measure Poisons (B, Cd, Sm or Gd) Which Have High Capture Cross Sections
University of Michigan- Nuclear Engineering	J. King/G. Summerfield D. Mildner	C. Tangari	Polymer Research at Elevated Temperatures Using SANS

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<u>UNIVERSITY &amp; DEPARTMENT</u>	<u>FACULTY/MURR STAFF</u>	<u>STUDENTS</u>	<u>TITLE OR BRIEF DESCRIPTION OF RESEARCH</u>
University of Dayton	B. Mitchell/M. Glascock		NAA to Measure Ga in Silicon
UMC-Chemistry	D. Troutner/G. Ehrhardt	W. Goeckeler	Ta-183/W-183m Generator for Nuclear Medicine
UMHSC-Radiology	G. Ehrhardt	S. Benner	Cd-109/Ag-109m Generator for Nuclear Medicine
UMHSC-Radiology/ UMR-Materials Research Center	R. Holmes, D. Day/ G. Ehrhardt	S. Benner	P-32 Glass Microspheres for Radiotherapy
UMHSC-Physiology	A. Jones/G. Ehrhardt	W. Goeckeler	Studies of Essential Hypertension
UMC-Physics	G. Schupp/G. Ehrhardt	W. Goeckeler	Study of Electron Shake-Off Following Positron Decay of Zn-65 and Cu-64
UMHSC-Pharmacology	A. Harris/G. Ehrhardt		Rb-86 as a Potassium Analog for Hypertension Studies
UMHSC-Surgery	R. Silver/G. Ehrhardt		Beta-Autoradiography Using In-115m
UMC-Dairy Science	T. Mollet/G. Ehrhardt		Calibration of Whole Body Counter for Cattle with K-42
UMC-Health Physics/ UMC-Nuclear Engineering	P. Lee, W. Miller/ G. Ehrhardt,	W. Goeckeler	Production of Isotopes for Instruction of Union Electric Technicians, Callaway
UMC-Physics	D. Cowan/G. Ehrhardt		Radiation Damage on BaO and BaS Windows
U. of Cincinnati- Physics	P. Boolchand/ G. Ehrhardt	W. Bresser	Studies of Alloys Using Mossbauer Spectroscopy
U. of Cincinnati- Physics	S. Jha/G. Ehrhardt		Magnetic Hyperfine Interactions in Alloys Studied Using Mossbauer Isotopes

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<u>UNIVERSITY &amp; DEPARTMENT</u>	<u>FACULTY/MURR STAFF</u>	<u>STUDENTS</u>	<u>TITLE OR BRIEF DESCRIPTION OF RESEARCH</u>
Purdue-Physics	J. Mullen/G. Ehrhardt, W. Yelon		Sn-119m as a Mossbauer Source
UMKC-Nuclear Medicine	J. Spicer/G. Ehrhardt	W. Goeckeler	Sn-113m/In-113m Generator for Gastric Emptying Studies
U. of Texas Medical School-Nuclear Medicine	A. Gobuty/G. Ehrhardt	W. Goeckeler	In-113m Generator for Cell Labeling Studies
UMKC-Physics	J. Jean/G. Ehrhardt,	W. Goeckeler	Ce-141 Calibrator Source for Study of Surfaces
UMKC-Medical School	S. Meithil/G. Ehrhardt		Use of Cd-109 Tracer to Study Biological Fate of Ingested Cd Pollution
MURR	R. Berliner		A Set of Computer Programs for Dealing with Floating Point Numbers
MURR	J. Sudol		Design and Testing of a Dual-Channel Amplifier/ADC Circuit for the Position Sensitive Detector System
Purdue-Physics	R. Colella/W. Yelon	M. Schmidt	Gamma-Ray Intensities in LiF and KCl
Los Alamos National Lab	A. Taylor, C. Olson, R. Silver, J. Goldstone/ R. Brugger		Development of a Neutron Inelastic Spectrometer in the 1-15eV Incident Energy Neutron Range.
Monsanto Corporation	B. Stone/S. Gunn		Calibration of the Photoluminescence Technique for Determination of Phosphorous in NTD-Si
University of Houston-Chemistry	I. Bernal/F. Ross, E. Schlemper	K. Fair	Single Crystal Neutron Diffraction Studies of $\text{Co}(\text{NH}_3)_6 \text{CuCl}_5$ at 50K



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<u>UNIVERSITY &amp; DEPARTMENT</u>	<u>FACULTY/MURR STAFF</u>	<u>STUDENTS</u>	<u>TITLE OR BRIEF DESCRIPTION OF RESEARCH</u>
Los Alamos National Lab	A. Taylor, C. Olson, R. Silver, J. Goldstone/ R. Brugger		Measurements of Chemical Binding Effects on Neutron Scattering from the 6.674eV Resonance of <sup>238</sup> U
Los Alamos National Lab	A. Taylor, C. Olson, R. Silver, J. Goldstone/ R. Brugger		Test of the Validity of Scaling Laws for eV Neutrons Scattering From Water
Nuclepore Corp. UMC-Physics	S. Lukevic, B. DeFacio/ D. Mildner	D. Liu	SANS Measurements on Polycarbonate Filters
University of West Virginia-Physics	K. Ali/E. Desa		SANS Measurements on Illite Clays
UMC-Chemistry	F. Ross, E. Schlemper/ G. Long	K. Fair	Single-Crystal Neutron Diffraction Studies of NiPy <sub>4</sub> Cl <sub>2</sub>
UMC-Chemistry	D. Troutner	J. Robertson	Yields of I-132 and I-134 From Fission of Americium
UMC-Nuclear Engineering	M. Prelas	M. Peck, C. Chung	Efficient Production of the Synfuel CO
UMC-Nuclear Engineering (Medical Physics)	W. Kennedy/M. Glascock	L. Achtemeier	Irradiation of Mice Using the PGNAA Beamport for NMR Analysis of Tissue Radiation Damage
General Electric	M. Glascock		Analysis of Fuel Reprocessing Samples Using PGNAA
Texas A&M	M. Glascock	T. Spalding	Analysis of 56 Samples of Horse Feces Using PGNAA to Measure Sm
Canadian Geological Survey	S. Abbey/M. Glascock	T. Spalding	Analysis of Iron Ore Using the PGNAA Beamport

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<u>UNIVERSITY &amp; DEPARTMENT</u>	<u>FACULTY/MURR STAFF</u>	<u>STUDENTS</u>	<u>TITLE OR BRIEF DESCRIPTION OF RESEARCH</u>
UMC-Physics	D. Mildner/H. Kaiser	D. Bahm	Determining Distributions From SANS Data Using the Vonk Program
UMC-Physics Arizona State Physics	S. Werner/H. Kaiser	E. George	Neutron Interferometry
UMC-Mechanical Engineering	A. Krawitz	B. Verkruyse	Analysis of IPNS and 2XD Powder Diffraction Data
Grumman Aerospace UMC-Mechanical Engineering	J. Papazian/A. Krawitz D. Mildner	I. Ukpong	Guinier-Preston Zones in Aluminum-Copper Alloys
Argonne National Lab.	A. Schultz/F. Ross		Low-Temperature Single-Crystal Neutron Diffraction Data for a Methylene - Tungsten Catalytic Intermediate.
UMC-Physics	R. Berliner	E. Desa	Graphics Analysis of SANS Data
Burroughs Corp.	J. Meese/ C. Tompson		Neutron Irradiation Processing to Reduce Soft Errors in Dynamic RAMS
UMC-Physics Electrical Engineering	J. Farmer/ J. Meese		DLTS in Neutron Irradiated Ge
UMC-Physics Electrical Engineering	J. Meese		Transient Annealing Spectroscopy
UMC-Physics Electrical Engineering	H. Chandrasekhar/ M. Chandrasekhar/ J. Meese	S. Thaler	Raman Scattering in Neutron Irradiated Semiconductors
UMC-Physics Electrical Engineering	J. Farmer/ J. Meese	D. Lamp	Deep Level Transient Spectroscopy of Neutron Irradiated Semiconductors

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<u>UNIVERSITY &amp; DEPARTMENT</u>	<u>FACULTY/MURR STAFF</u>	<u>STUDENTS</u>	<u>TITLE OR BRIEF DESCRIPTION OF RESEARCH</u>
Lawrence Berkeley Laboratory- Kitt Peak Observatory	J. Meese/E. Haller/ N. Palaio/M. Rodder		NTD Germanium for IR Bolometers used for IR As- tronomy
UMC-Physics Centre Universitaire de Luminy-Universitaire d' Aix-Marseille-Technical University of Denmark	H. Taub/H. Danner J. Coloumb/J. Biberman J. Suzanne/F. Hansen	G. Trott	Structure and Phase Transitions of Ethane Adsorbed on Graphite
UMC-Physics	R. Berliner/J. Sudol		Microprocessor Software for the Dedicated Micro- processor Rotor Controller for IMUGS
UMC-Nuclear Engineering	W. Miller	J. Korsah	An Improved Fast-Neutron Dosimeter
UMC-Nuclear Engineering	D. Alger/W. Miller	J. Lindsay	Real Time Neutron Radiography
MURR	J. Sudol/R. Berliner		Assembling the Multi-microprocessor Interface for 2 x D'
Stephens College/ UMC/Chemistry	H. Anderson/ S. Morris	C. Callihan C. Kanatazar	Longitudinal Trace Element Comparisons with Human Milk, Market Milk and Commercial Infant Formula
UMC- Animal Science/ UMC-Chemistry	W. Loch/M. Smith W. Pfander/R. Elmore S. Morris	E. Heimann	Selenium Status in Pony Studs
UMC-Animal Science/ UMC-Chemistry	R. Morrow/M. Smith S. Morris	J. Hancock	Selenium Status in Beef Bulis
MURR	J. Vogt/M. Glascock	R. Vega	Development of Statistical Analysis Codes
UMC-Mechanical Engineering	A. Krawitz	B. Hall	Residual Stress in Metal Matrix Fiber Reinforced Composites

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<u>UNIVERSITY &amp; DEPARTMENT</u>	<u>FACULTY/MURR STAFF</u>	<u>STUDENTS</u>	<u>TITLE OR BRIEF DESCRIPTION OF RESEARCH</u>
UMC-Animal Science/ UMC-Chemistry	W. Loch/S. Morris	L. Taylor	Selenium Status in Mares:Effect of Fescue
UMC-Animal Science/ UMC-Chemistry	R. Morrow/G. Garner M. Glascock/S. Morris	C. Atwell	Determination of K, Ca and Mg in Fescue:Grass Teteny Syndrome
City College of New York Mount Sinai School of Medicine/ UMC-Chemistry	K. Bhuyan/S. Morris T. Baxter		Selenium Status of the Eye
Harvard University School of Medicine/ UMC-Chemistry	W. Willet/S. Morris		Selenium and its Possible Relationship to Cancer Incidence
UMC-Biochemistry/ UMC-Chemistry	E.E. Pickett/S. Morris	S. Schlegel	Contamination Studies from Homogenization of Diets Using a Stainless Steel Cutter
SAI/ UMC-Chemistry	A. Abu-Samra/J. Carni S. Morris		Determination of Organically Bound Cl and Br in Milk and Sera Via Gel Chromatography and NAA
UMC-Chemistry	D. Troutner/S. Morris T. Baxter	P. Brown	Methodology for Gunshot Residue Screening Via RNAA Using a Fast Na-24 Decontamination Procedure
UMKC-Pharmacy/ UMC-Chemistry	S. Melethil/S. Morris		Kinetic Disposition of Selenium
UMC-Chemistry	R. Murmann/E. Schlemper S. Morris	M. Hoppe	Determination of Fe, I, K in Support of an X-ray Crystallographic Study
Mo. Dept. of Conservation/ UMC-Chemistry	N. Geissman/S. Morris T. Baxter		Analysis of Blood and Tissue from Missouri Deer for Selenium

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<u>UNIVERSITY &amp; DEPARTMENT</u>	<u>FACULTY/MURR STAFF</u>	<u>STUDENTS</u>	<u>TITLE OR BRIEF DESCRIPTION OF RESEARCH</u>
UMC-Chemistry	S. Morris	V. Flynn	Distribution of Selenium in the Pituitary Gland and Pituitary Hormones
Univ. of Penn./ UMC-Chemistry	P. Bloch/S. Morris J. Carni		Occupational Exposure of Dental Professionals to Mercury
UMC-Dairy Science/ UMC-Chemistry	C. Merilan/S. Morris	D. Trokey	Autoradiography of Testes for Se-75
UMC-Biochemistry	A. White/M. Glascock	M. Liebel	Analysis of Sulfur by PGNAA
NBS	J. Vogt/M. Glascock C. Graham/J. Carni	T. Spalding	Analysis of SRM's by PGNAA and NAA
UMC-Chemistry/ UMC-Anthropology	R. Cobean/M. Glascock	T. Spalding	Methodology for Performing PGNAA on Mesoamerican Obsidian
MURR	G. Ehrhardt/M. Glascock	T. Spalding	Analysis of P-doped Glass by PGNAA
MURR	F. Ross/M. Glascock	T. Spalding	PGNAA on Neutron Diffraction Sample Containers
MURR	M. Glascock	S. Langhorst	PGNAA to Measure Hydrogen in Charcoal Filters
UMC-Anthropology	C. Chapman/C. Graham J. Vogt		NAA on El Slavador Obsidian
Colorado Archaeological Society	A. Johnson/C. Graham J. Vogt		NAA on Catlinite
Texas Tech. University	W. Mayer-Oakes/C. Graham J. Vogt		NAA on Obsidian Artifacts
UMR-Material Research	Van Schalkwyk/C. Graham		NAA for Mn and Y
MURR	A. Meyer/C. Graham J. Vogt		Flux Profile for FFIF

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<u>UNIVERSITY &amp; DEPARTMENT</u>	<u>FACULTY/MURR STAFF</u>	<u>STUDENTS</u>	<u>TITLE OR BRIEF DESCRIPTION OF RESEARCH</u>
Salisbury High School	G. Thurman/C. Graham		NAA on Polymers
Univ. of Arkansas	D. Sears/C. Graham		NAA on Meteorite Samples
NBS	J. Blackman/C. Graham J. Vogt		NAA on Russian Obsidian
Arkansas Tech.	D. Wolfman/C. Graham J. Vogt		NAA on Arkansas Obsidian
MURR	J. Vogt/C. Graham		INAA Development for Obsidian Analysis
Brigham Young Univ.	F. Nelson/C. Graham J. Vogt		Interlaboratory Analysis of MURR Mesoamerican Obsidian Collection
Univ. of Pittsburgh	R. Dennon/C. Graham J. Vogt		Interlaboratory Analysis of MURR Mesoamerican Obsidian Collection
Argonne National Lab.	J. Bates/S. Langhorst C. Graham		Analysis of Leachate Samples by NAA
MURR-Operations	S. Langhorst	A. Duchemin	Development of P-32 Analysis
UMC-Nuclear Engineering	W. Miller/S. Morris	S. Langhorst	Improvement of Radioiodine Analysis in Air
UMC-Nuclear Engineering (Medical Physics)	W. Kennedy/V. Spate	C. Ikoro	Au Flux Monitoring for Beam Port F
Rockbridge High School	S. Langhorst	D. Yarwood	Gamma Analysis for Natural Radioactivity in Rocks
Iowa State-Earth Science	K. Sieffert/J. Carni	R. Dawson	INAA on Geological Samples
Portland State-Earth Science	G. Lendaris/J. Carni	P. LaViolette	NAA for Ir in Ocean Sediment



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<u>UNIVERSITY &amp; DEPARTMENT</u>	<u>FACULTY/MURR STAFF</u>	<u>STUDENTS</u>	<u>TITLE OR BRIEF DESCRIPTION OF RESEARCH</u>
University of Illinois	L. Berger/J. Carni	S. Ricke	La to Study Metabolism and Rumen Characteristic of Sheep and Cattle
University of Illinois	L. Berger/J. Carni	S. Loerch	La in Feed & Feces Materials to Study Nutrient Digestion
University of Illinois	L. Berger/J. Carni	C. Staples	La in Rumen, Feed, Feces
University of Illinois	L. Berger/J. Carni	D. Hefner	La Determination in Cattle Feed Supplementation
University of Illinois	L. Berger/J. Carni	S. Plegge	La to Study Soybean Meal Utilization by Ruminants
University of Illinois	L. Berger/J. Carni	P. Vanderaar	La Determination in Feed
University of Illinois	L. Berger/J. Carni	H. Jung	La Determination in Feed
UMC-Dairy Science	F. Martz/J. Carni	S. Solomon	Ce and La in Milk Cows
UMC-Animal Science	J. Paterson/J. Carni	J. Gubas	Ce in Cattle
UMC-Animal Science	J. Paterson/J. Carni	C. Hunt	Cr and Ce in Feed, Rumen and Fecal Samples
UMC-Animal Science	J. Paterson/J. Carni	C. Anderson	Ce Determination in Rumen and Fecal Samples
Arkansas Tech	D. Wolfman/J. Carni J. Vogt		U and Th in Glass Slides
University of Kentucky- Chemistry	W. Ehmann/J. Carni		Al in Brain Tissue
University of Kentucky	W. Ehmann/J. Carni	M. Aluddin	Long Irradiations on Blood and Brain Tissue
University of Chicago	L. Grossmann/J. Carni C. Graham/ S. Schlegel	I. Kawabe	NAA on Rock Samples

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<u>UNIVERSITY &amp; DEPARTMENT</u>	<u>FACULTY/MURR STAFF</u>	<u>STUDENTS</u>	<u>TITLE OR BRIEF DESCRIPTION OF RESEARCH</u>
Arizona State	M. Germani/J. Carni		Irradiation of Air Filters
Canadian Geological Survey	S. Abbey/M. Glascock J. Carni	T. Spalding	NAA on Fe Ore Sample
Washington University	M. Lindstrom/J. Carni		P-tube Irradiations on Lunar Samples
University of Kentucky	W. Ehmann/J. Carni		Irradiation of Bile Samples
University of Kentucky	W. Ehmann/J. Carni		10 Hour Irradiation on Coal and Fly Ash Samples
MURR	C. Edwards/J. Carni M. Glascock		INAA and PGNAA on Graphite
UMC-Forestry	D. Smith/J. Carni		INAA on Wood Chips
UMC-Agricultural Engineering	D. Smith/J. Carni	S. Plummer	La and Ce Marker Analysis in Cabbage Leaves
University of Illinois UMC-Mechanical Engineering	W. Williams/R. Berliner A. Krawitz		NbC <sub>x</sub> Powder Profile Analysis of Carbides for C Occupation Measurements
MURR	J. Farmer		Completion of Transient Current Spectrometer; Measured $\tau_{max}$ 1.5 $\mu$ sec
UMC-Nuclear Engineering (Medical Physics)	W. Kennedy	J. Pottruff	Simultaneous Neutron and Gamma ray Tomography of Biological Samples
MURR	J. Vogt/R. Cobean C. Graham		NAA of Mesoamerican Obsidian
MURR	J. Vogt/R. Benfer	S. Schlegel	NAA of Archaeological Bone

PUBLICATIONS FROM USE OF MURR -- JULY 1981 - JUNE 1982

<u>AUTHOR</u>	<u>TITLE</u>	<u>JOURNAL</u>	<u>STATUS</u>	<u>CAMPUS/DEPARTMENT</u>
T. Brun, J. Jorgensen, M. Misawa, F. Rotella, S. Susman, D. Mildner	Defects and Disorder in the Fast-Ion Electrode Lithium-Aluminum	J. Electrochemical Soc.	Accepted	Argonne National Lab-Solid State Science/MURR/UMC-Physics
M. Kimura, J. Carpenter, G. Mildner	Calculation of the Heat Deposition and the Expected Rate of Temperature Rise in Moderator, Reflector and Decoupler Materials for IPNS-I	Argonne National Laboratory Report, ANL-81-22, 1981	Published	Argonne National Lab-Intense Pulsed Neutron Source/MURR/UMC-Physics
D. Mildner, J. Carpenter	On the Short-Range Atomic Structure of Non-Crystalline Carbons	J. Non-Crystalline Solids <u>47</u> , 391-402, 1982	Published	MURR/UMC-Physics/Argonne National Lab-Intense Pulsed Neutron Source
J. Simon, D. Troutner, W. Volkert, R. Holmes	Radiochemical Characterization of Tc-Cyclam	Radiochem. Radioanal. Letters, <u>47</u> , 111-124, 1981	Published	UMC-Physics/V.A. Hosp.-Radiology, Nuclear Medicine
R. Berliner, D. Mildner, O. Pringle, J. King	A Large Area Position Sensitive Neutron Detector	Nucl. Instrum. & Meth., <u>185</u> , 481-495, 1981	Published	MURR/UMC-Physics/University of Michigan-Nuclear Engineering
J. Carpenter, D. Mildner	Neutron Guide Tube Gain for a Remote Finite Source	Nucl. Instrum. & Mech., <u>196</u> , 341-348, 1982	Published	Argonne National Lab-Intense Pulsed Neutron Source/MURR/UMC-Physics
S. Desa A. Wright J. Wong R. Sinclair	A Neutron Diffraction Investigation of the Structures of Vitreous Zinc Chloride	J. Non-Crystalline Solids, 1982	In Press	University of Reading-Physics/MURR/General Electric/Harwell-Material Physics

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H. Danner, H. Kim, Y. Sharma	Low Frequency Skeletal Vibrations in Solid n-Alkyl Bromides by Neutron Inelastic Scattering: n-Pentyl, n-Hexyl, n-Heptyl and n-Octyl Bromides	Spectrochimica Acta, <u>37A</u> , 219, 1981	Published	UMC-Physics/UMC-Chemistry
M. Kimura, J. Carpenter, D. Mildner	Power Densities in Materials in Spallation Neutron Source Environments	Nucl. Instrum. & Meth., 1982	In Press	Argonne National Lab-Intense Pulsed Neutron Source/MURR/UMC-Physics
C. Borso, J. Carpenter, F. Williamson, G. Holmblad, M. Mueller, J. Faber, Jr., J. Epperson, S. Danyluk	Small-Angle Scattering at a Pulsed Neutron Source: Comparison with a Steady State Reactor	J. Appl. Cryst., <u>15</u> , 443-448, 1982	Published	Argonne National Lab-Biological and Medical Research, Intense Pulsed Neutron Source, and Materials Science
J. Herbst, J. Croat, R. Lee, W. Yelon	Neutron Diffraction Studies of $Nd_2(Co_xFe_{1-x})_{17}$ Alloys: Preferential Site Occupation and Magnetic Structure	J. Appl. Phys., <u>53</u> , 250-256, 1982	Published	General Motors-Physics/MURR/UMC-Physics
J. Staudenmann B. DeFacio L. Testardi S. Werner R. Flukinger J. Muller	Debye Classes in A15 Compounds	Phys. Rev. <u>B24</u> , 6446, 1981	Published	Iowa State University/UMC-Physics/Bell Labs.
W. Yelon, S. Werner, S. Shivashankar, J. Honig	Neutron Diffraction from Stoichiometric and Metal-Deficient $V_2O_3$	Phys. Rev. B, <u>24</u> , 1818-1823, 1981	Published	MURR/UMC-Physics/Purdue-Chemistry

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M. Sorkin, K. Nolph, H. Anderson, S. Morris, J. Kennedy, B. Prowant, H. Moore	Aluminum Mass Transfer Dur- ing Continuous Ambulatory Peritoneal Dialysis	Peritoneal Dialysis Bull., <u>1(6)</u> , 91-93, 1981	Published	UMHSC-Nephrology/ Stephens College/MURR
H. Kim, H. Danner, Y. Sharma	Low Frequency Skeletal Vibrations and Rotational Isomers of Solid 1,4- dibromobutane and 1,5- dibromopentane Studied by Neutron Inelastic Scattering	Spectrochemica Acta, <u>37A</u> , 367, 1981	Published	UMC-Chemistry/UMC- Physics
J. Carpenter, M. Kimura, R. Kleb, M. Misawa, R. Stefiuk, D. Mildner	Measurement of the Heat De- position in Moderators and Decouplers in the ZING-P' Pulsed Spallation Neutron Source	Nucl. Instrum. & Meth., 1982	In Press	Argonne National Lab- Intense Pulsed Neutron Source/MURR/UMC- Physics
J. Carpenter, R. Kleb, T. Postol, R. Stefiuk, D. Mildner	The Liquid Hydrogen Moder- ator on the ZING-P' Pulsed Spallation Neutron Source	Nucl. Instrum. & Meth., <u>189</u> , 485-501, 1981	Published	Argonne National Lab- Intense Pulsed Neutron Source and Solid State Science/U.S. Congress- Office of Technology Assessment/MURR/UMC- Physics
H. Aminfar, R. Brugger	2 keV Scandium Filtered Neutron Beam Using Separated Isotopes as a Secondary Fil- ter	Nucl. Instrum. & Meth., <u>183</u> , 599-601, 1981	Published	UMC-Nuclear Engineer- ing/MURR

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A. Hanna, R. Brugger, M. Glascock	The Prompt Gamma Neutron Activation Analysis Facility at MURR	Nucl. Instrum. & Meth., <u>188</u> , 619-627, 1981	Published	UMC-Nuclear Engineering
J. Meese	Processing of Semiconductor Materials and Devices by Neutron Irradiation	J. Nucl. Materials	Accepted	MURR/UMC-Physics
M. Prelas, S. Loyalka	A Review of the Utilization of Energetic Ions for the Production of Excited Molecular and Atomic States and Chemical Synthesis	Prog. in Nucl. Energy, 1981	Published	UMC-Nuclear Engineering/MURR
M. Prelas, G. Jones	Design Studies of Volume Pumped Photoalytic Systems Using a Photon Transport Code	J. Appl. Phys., Jan. 1982	Published	UMC-Nuclear Engineering/MURR
J. Farmer, J. Meese	DLTS in Neutron Irradiated Semiconductors	J. Nucl. Materials	Accepted	MURR/UMC-Physics
G. Liu, D. Alger, S. Bull	Modulation Transfer Functions for Neutron Radiographic Film Imaging Systems	J. Materials Evaluation, 1982	Published	UMC-Nuclear Engineering/MURR
C. Thompson, J. Meese	Neutron Irradiation Processing to Reduce Soft Errors in 16K Dynamic RAMs	I.E.E.E. Trans. Nucl. Sci., <u>28</u> , 3987, 1981	Published	Burrough Corp./MURR/UMC-Physics
M. Schmank, A. Krawitz	Measurement of a Stress Gradient Through the Bulk of an Aluminum Alloy Using Neutrons	Met. Trans. A., <u>13A</u> , 1069-1076, 1982	Published	UMC-Mechanical Engineering



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M. Lecours, M. Prelas, S. Gunn, C. Edwards, G. Schlapper	The Design, Construction, and Testing of a Nuclear- Pumping Facility at the University of Missouri Re- search Reactor	Review of Science Instruments, July 1982	Published	UMC-Nuclear Engineer- ing/MURR
T. Wu, J. Cohen, W. Yelon	Phonon Dispersion and the Thermodynamic Properties of AuNi	Metallurgical Trans.	Submitted	Northwestern Univer- sity-Materials Science /MURR
D. Mildner, R. Berliner, O. Pringle, J. King	The Small Angle Neutron Scattering Spectrometer at the University of Missouri Research Reactor	J. Appl. Cryst., <u>14</u> , 370-382, 1981	Published	MURR/UMC-Physics/ University of Michigan- Nuclear Engineering
D. James, C. Graham, M. Glascock, S. Hanna	Water Leachable Boron from Coal Ashes	Environ. Sci. and Technology, <u>16</u> , 195-197, 1982	Published	Texas A&M/MURR
R. Alkire, W. Yelon	Design and Performance of a Gamma-Ray Diffractometer at 0.12Å	J. Appl. Cryst., <u>14</u> , 362- 369, 1981	Published	UMR-Chemistry/MURR
W. Miller, J. Sohl	Spectral Measurements of Filtered Neutron Beams Using a Bonner Sphere Spectrometer	Trans. Am. Nucl. Soc.	Accepted	UMC-Nuclear Engineer- ing
D. Mildner	Neutron Gain for Converging Guide Tubes	Nucl. Instrum. & Meth., 1982	In Press	MURR/UMC-Physics
C. Tangari, J. King, G. Summerfield	Small-Angle Neutron Scatter- ing on Bulk Polystyrene with Mismatched $M_w$	Macromolecules, <u>15</u> , 132-136, 1982	Published	University of Michigan- Nuclear Engineering

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W. Markesbery, W. Ehnann, T. Hossain, M. Aladdin, P. Goodin	INAA of Brain Aluminum in Alzheimer Disease and Aging	Annals of Neurology, <u>10</u> , 511- 516, 1981	Published	University of Kentucky
E. Epperson, D. Mildner, H. Chen	The Decomposition of a Ni- 12.5 at % Si Alloy	AIP Conference Proceedings of Symposium on Neutron Scattering, Argonne, IL, 1981	Accepted	Argonne National Lab- Materials Science/ MURR/UMC-Physics/ University of Illinois- Metallurgical and Mining Engineering
A. Chung, M. Prelas	Radiolytic Dynamics of Helium- Buffered CO <sub>2</sub> and Water Vapor Mixtures: A System Engineer- ing-Oriented Study	J. of Radiation Physics & Chemistry, 1982	Submitted	UMC-Nuclear Engineer- ing
W. Yelon, M. Crow, S. Nha, C. Holmes, G. Schupp	A High Intensity Mossbauer Diffraction Apparatus	Journal de Physique, 1982	In Press	MURR/UMC-Physics
W. Yelon, F. Ross	Gamma-Ray Crystallography and Related Techniques	Nucl. Inst. & Meth., <u>193</u> , 285-292, 1982	Published	MURR/UMC-Physics
C. Crowder, B. Kebe, W. James, W. Yelon	A Powder Neutron Diffraction Study of Antiferromagnetism in Er <sub>6</sub> Mn <sub>23</sub> D <sub>23</sub>	AIP Conference Proceedings, 1981	In Press	UMR-Chemistry and Materials Research/ MURR
C. Crowder, B. Kebe, W. James, W. Yelon	Magnetic and Structural Prop- erties of Y <sub>6</sub> Mn <sub>23</sub> D <sub>23</sub>	The Rare Earths in Modern Sci. & Tech., Vol. III, Plenum Publishing, New York, 1981	In Press	UMR-Chemistry/CNRS, Grenoble

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B. Kebe, C. Crowder, W. James, J. Deportes, R. Lemaire, W. Yelon	Evidence for the Non-Collinearity of the Magnetic Structure of $\text{Er}_6\text{Mn}_{23}$	The Rare Earths in Modern Sci. & Tech., Vol. III, Plenum Publishing, New York, 1981	In Press	UMR-Chemistry and Materials Research/ CNRS-Grenoble/MURR
B. Decrop, J. Deportes, B. Kebe, C. Crowder, W. James, W. Yelon	Magnetic Properties of $\text{ErM}_3$ : $M = (\text{Ni}, \text{Fe}, \text{Co})$	The Rare Earths in Modern Sci. & Tech., Vol. III, Plenum Publishing, New York, 1981	In Press	CNRS-Grenoble/UMR-Chemistry and Materials Research/MURR
M. Yethiraj, S. Werner, W. Yelon, J. Honig	Phonons in $\text{V}_2\text{O}_3$ and $\text{Ti}_2\text{O}_3$	AIP Conference Proceedings, 1981	In Press	UMC-Physics/MURR/ Purdue-Chemistry
A. Krawitz, E. Drake, R. DeGroot, C. Vassel, W. Yelon	Neutron Diffraction Studies of Cemented Carbide Composites	Proceedings of the International Conference on the Science of Hard Materials, 1981	In Press	UMC-Mechanical Engineering/MURR/UMC-Physics
C. Crowder, W. James, W. Yelon	A Powder Neutron Diffraction Study of $\text{LaNi}_{4.5}\text{Al}_{0.5}\text{D}_{4.5}$ Structure at 298 and 77°K	J. Appl. Phys., 1982	In Press	UMR-Chemistry and Materials Research/ CNRS-Grenoble/MURR
Y. Yang, B. Kebe, W. James, J. Deportes, W. Yelon	Structural and Magnetic Properties of $\text{Y}(\text{Al}_{1-x}\text{Fe}_x)_{12}$	J. Appl. Phys., <u>52</u> , 2077-2078 (1981)	Published	UMR-Chemistry and Materials Research/ CNRS-Grenoble/MURR

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A. Levi, A. Burger, M. Schieber, L. Van den Berg, W. Yelon, R. Alkire	Improved Fabrication of HgI <sub>2</sub> Nuclear Radiation Detectors by Machine Cleaving	Nucl. Inst. & Meth., 1982	In Press	Hebrew University - Jerusalem/EGG/MURR/ UMC-Physics/UMR- Chemistry
H. Aminfar, R. Brugger	Doppler Measurements of <sup>238</sup> U	Proceedings of the Joint IAEA/ NEA Consultants Meeting on Uranium and Plutonium Res- onance Parameters, Vienna, September 1981	Accepted	UMC-Nuclear Engineer- ing/MURR
G. Schlapper, R. Brugger, R. Koeppel, G. Larsen, R. Jost	A Demonstration of Filtered Beam Neutron Computed Tomog- raphy: Evaluation of a 37 Pin Fuel Assembly Phantom	Materials Evaluation, <u>39</u> , 1121-1129, 1981	Published	MURR/UMC-Nuclear Engineering
E. Rhodes, J. Barton, C. Barton, G. Schlapper, R. Brugger, A. DeValpi, C. Dickerman, D. Rose	Ex-Core Neutron Radiography of Large Fuel Bundles	Trans. World Conference on Neutron Radiography, San Diego, California, December 1981	Published	MURR/UMC-Nuclear Engineering
A. Klein, S. Werner	Neutron Optics	Reports on Progress in Phys- ics, 1982	Submitted	Melbourne-Physics/UMC- Physics/MURR
M. Liebel A. White	Inhibition of the Soluble Guanylate Cyclase from Rat Lung by Sulfated Polyanions	Biochem. Biophys. Res. Comm., 104, 957 (1982)	Published	UMC/Biochemistry- UMHSC-Physiology

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R. Ganapathy	Evidence for a Major Meteorite Impact on the Earth 34 Million Years Ago: Implication on the Origin of North American Tektites and Eocene Extinction	Proceedings of the Conference on Large Body Impacts and Terrestrial Evolution, December 1981	Submitted	J.T. Baker Chemical Company
J. Farmer, D. Locker	Persistent Photoconductivity in Thin Epitaxial GaAs	J. Appl. Phys., <u>52</u> (9), 5718-5721, 1981	Published	MJRR/University of Dayton-Physics/Wright-Patterson AFB
A. Jones, J. Heidlage, R. Meyer, B. Day, A. Freeland	Non-Specific Supersensitivity of Aortic <sup>42</sup> K Effluxes During DOCA Hypertension in the Rat, and the Effects of Antihypertensive Therapy	<u>New Trends in Arterial Hypertension</u> , M. Worcel, J. Bonvalet, S. Langer, J. Menard, and J. Sassard, eds., Amsterdam, Elsevier/ North Holland, 163-173, 1981	Published	UMHSC-Physiology
J. Heidlage, A. Jones	The Kinetics of Ouabain-Sensitive Ionic Transport in the Rabbit Carotid Artery	J. Physiol., London, 243-262, 1981	Published	UMHSC-Physiology
A. Jones	Kinetics of Active Sodium Transport in Aorta From Control and Deoxycorticosterone Hypertensive Rats	Hypertension, <u>3</u> , 631-640, 1981	Published	UMHSC-Physiology
A. Jones, P. Dutta, E. Garwitz, J. Heidlage, D. Warden	Altered Active and Passive Transport in Vascular Smooth Muscle During Experimental Hypertension	<u>Cell Membrane Function and Dysfunction in Vascular Smooth Muscle</u> , T. Godrained and P. Meyer, eds., Amsterdam, Elsevier/North Holland, 192-208, 1981	Published	UMHSC-Physiology

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A. Jones	Electrolyte Metabolism of the Arterial Wall	<u>Vascular Smooth Muscle</u> , M. Crass, III and C. Barnes, eds., New York, Academic Press, 37-70, 1982	Published	UMHSC-Physiology
E. Garwitz, A. Jones	Aldosterone Infusion Into the Rat and Dose-Dependent Changes in Blood Pressure and Arterial Ionic Transport	Hypertension, <u>4</u> , 374-381, 1982	Published	UMHSC-Physiology
A. Jones	Ionic Dysfunction and Hypertension	<u>Ionic Regulation of the Microcirculation</u> , B. Altura, ed., 134-159, 1982	Published	UMHSC-Physiology
E. Garwitz, A. Jones	Altered Electrolyte Transport During Aldosterone-Induced Hypertension in the Rat	<u>Cellular Handling of Ions, Transmitter Release, Mineralocorticoids, Smooth Muscle Contractility and Hypertension</u> , 1982	In Press	UMHSC-Physiology
E. Garwitz, A. Jones	The Effects of DIDS and Anion Substitution on Aortic <sup>36</sup> Cl Turnover in Aldosterone Induced Hypertensive Rats	<u>Recent Advances in Hypertension Mechanisms</u> , M. Sambhi and H. Villarreal, eds., New York, KPR INFOR/MEDIA Corp., 1982	In Press	UMHSC-Physiology
A. Jones	Arterial Tissue Cations	<u>Hypertension: Physiopathology and Treatment</u> , J. Genest, O. Kuchel, P. Hamet, and M. Cantin, eds., New York, McGraw Hill, 1982	In Press	UMHSC-Physiology
J. Kim, S. Nha, S. Choe, G. Schupp	K-Shell Ionization in the Beta Decay of <sup>60</sup> Co	Phys. Rev. C, 1982	Accepted	UMC-Physics



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G. Crozaz, S. Sibley, D. Tasker	Uranium in the Silicate In- clusions of Stony-Iron and Iron Meteorites	Geochimica et Cosmochimica Acta, <u>46</u> , 749-754, 1982	Published	Washington University
M. Glascock, T. Spalding, J. Biers, M. Cornman	Analysis of Copper-based Metallic Artifacts by Prompt Gamma-ray Neutron Activation Analysis	Archaeometry	Submitted	MURR
J. Meese	Neutron-Transmutation-Doped Silicon - A book review	Crystal Lattice Defects	In Press	MURR
S. Thaler H. Chandrasekhar, M. Chandrasekhar, J. Meese	A Detailed Annealing Study of NTD-Si Utilizing Raman Scattering	Neutron Transmutation Doping to Semiconductors, ed. by R. Larrabee Plenum Press, N.Y.	Accepted	MURR/UMC-Physics
S. Thaler H. Chandrasekhar, M. Chandrasekhar, J. Meese	Suggested Annealing Mech- anisms in Neutron Irradiated Silicon	Defects and Radiation Effects in Semiconductors, 1982, Inst. of Phys., London	Accepted	MURR/UMC-Physics
J. Vogt C. Graham	Comparison of Main Frame and Minicomputer Spectral Analysis Codes in the Activation Analysis of Geological Samples	Atomic and Nuclear Methods in Fossil Energy Research, R. Filby, ed. Plenum Press pp. 97-113 (1982)	Published	MURR/UMC-Nuclear Engineering
R. Sinclair E. Desa A. Wright	Neutron Scattering Studies of a Nuclear Waste Storage Glass	J. Am. Ceramic Society	Submitted	Harwell-Materials Physics/Univ. of Reading-Physics/MURR

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R. Birtcher, J. Meese T. Scott	Spallation Neutron Damage in Group IV, III-V and II- VI Semiconductors at 5K	<u>Neutron Transmutation Doping in Semiconductors</u> , ed. by R. Larrabee Plenum Press, N.Y.	Accepted	MURR/Argonne National Labs
E. Halles, N. Palaio, M. Rodder	NTD Ge: A Novel Material for Low Temperature Bolo- metus	<u>Neutron Transmutation Doping in Semiconductors, 1982</u> , ed. by R. Larrabee, Plenum Press, N.Y.	Accepted	Lawrence Berkeley Labs
J. Farmer, J. Nugent	Transient Current Spectros- copy of Neutron Irradiated Silicon	<u>Neutron Transmutation Doping in Semiconductors</u> , ed. by R. Larrabee, Plenum Press, N.Y.	Accepted	MURR/UMC-Electrical Engineering
B. Stone, L. Shive, A. Henry, S. Gunn	Calibration of the Photo- luminescence Technique for Determination of Phos- phorous in Silicon by NTD	<u>Neutron Transmutation Doping in Semiconductors</u> , ed. by R. Larabee, Plenum Press, N.Y.	Accepted	Monsanto Corp./MURR
H. Kramer	Swirls in NTD Float-Zone Si	<u>Neutron Transmutation Doped Semiconductors</u> , ed. by R. Larrabee, Plenum Press, N.Y.	Accepted	Monsanto Corp./MURR
J. Watson B. Covington	Annealing Study of NTD Si	<u>Neutron Transmutation Doped Semiconductors</u> , ed. by R. Larabee, Plenum Press, N.Y.	Accepted	San Houston University
F. Ross W. Yelon	Solid State Detectors	Trans. Am. Crystallography Assn., 1982	In Press	MURR
C. McCarthy C. Tompson F. Ross Z. Fisk	Structure and Magnetic Prop- erties of TbB <sub>4</sub>	Proceedings-Novel Materials and Techniques in Condensed Matters, 1982	In Press	UMC-Physics/MURR/ U. of California- La Jolla

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S. Werner R. Word	Neutron Interferometric Measurement of the Real Part of the Scattering Lengths of Natural and Isotopically Pure Sn-149	Symposium on Neutron Scattering, AIP Conference Proceedings (Argonne National Laboratory July 1981)	Published	UMC-Physics
S. Werner R. Word	A Phonon Density of States Effect in Resonant Neutron Interferometry: Theory and Measurement for Isotropically Pure Samarium 149	Physics Review B, 1982	Accepted	UMC-Physics
S. Werner J. Cable G. Felcher N. Wakabayashi	Neutron Polarization Analysis Study of the Spin Structure of Cu-Mn Spin Glasses	Physical Review Letter	Submitted	UMC-Physics/Oak Ridge National Laboratory
A. Krawitz, J. Brune, M. Schmank	Measurements of Stress in the Interior of Solids Using Neutrons	Proc. 28th Sagamore Army Materials Res. Conf., Lake Placid, NY, July 1981	In Press	UMC-Mechanical Engineering
L. Oliver R. Balland O. Manuel	Iodine-129 in Missouri Rain and Milk	J. Radioanal. Chem., <u>68</u> , 233 (1982).	Published	UMR-Chemistry
K. Carneiro L. Passell W. Thomlinson H. Taub	Neutron-diffraction Study of the Solid Layers at the Liquid-solid boundary in $^4\text{He}$ Films Adsorbed on Graphite	Phys. Rev. <u>B24</u> , 1170 (1981)	Published	UMC-Physics/ Brookhaven National Laboratory
K. Carneiro L. Passell W. Thomlinson H. Taub	Neutron Diffraction from the Second Layer of $^4\text{He}$ on Graphite	Proceedings of the 16th International Conference on Low Temperature Physics	Published	UMC-Physics/ Brookhaven National Laboratory

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M. Glascock	Practical Applications of Neutron Capture Reactions and Prompt Gamma-rays	Inst. Phys. Conference Ser. No. 62 Chapter 4, 641 (1981)	Published	MURR
S. Langhorst S. Morris W. Miller	Analysis of Loading Iodine Filters	Trans. Amer. Nucl. Soc. Vol. 39, 100-101 (1981).	Published	MURR/UMC-Chemistry/ UMC-Nuclear Engineering
V. Spate S. Morris S. Langhorst	Argon-41 Monitoring at a Research Reactor	Trans. Amer. Nucl. Soc. Vol. 39, 113-114 (1981).	Published	MURR/UMC-Chemistry/ UMC-Nuclear Engineering
J. Vogt C. Graham M. Glascock R. Cobean	Determination of Elemental Compositions of Mesoamerican Obsidian Sources by Neutron Activation Analysis	Actas de Simposio "La Obsidiana En Mesoamerica, Pachuca, Hidalgo, Mexico (1981)	In Press	MURR
J. Vogt C. Graham R. Cobean M. Glascock D. Ives	Sources of Error in the Trace Element Characterization of Lithic Materials	Actas de Coloquis "Perspectivas en el Estudio de la Litica", Mexico City (1981).	In Press	MURR/UMC-Anthropology
P. Schmidt M. Glascock	Applications and Problems of Parametric Counting	J. Radioanal. Chem. 69, 271 (1982)	Published	MURR
J. Vogt C. Graham M. Glascock R. Cobean	A Study of Mesoamerican Obsidian Sources Using Activation Analysis	J. Radioanal. Chem. 69, 27 (1982)	Published	MURR
C. Graham M. Glascock J. Carni J. Vogt T. Spalding	Determination of Elements in National Bureau of Standards Geological Standard Reference Materials By Neutron Activation Analysis	Anal. Chem.	Accepted	MURR/UMC-Chemistry/ UMC-Nuclear Engineering

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M. Glascock T. Spalding J. Biers M. Cornman	Analysis of Copper-Based Metalic Artifacts By Prompt Gamma-ray Neutron Activa- tion Analysis	Archaeometry	Submitted	MURR/UMC-Chemistry/ UMC-Museum of Art and Arch.
M. Glascock	Analytical Applications of PGNAA	Trans. of Amer. Nucl. Soc.	Submitted	MURR
S. Morris M. Smith R. Morrow E. Heimann J. Hancock T. Gall	INAA Determination of Sel- enium Via $^{77m}\text{Se}$ in Plasma, Semen and Hair Samples From Beef and Dairy Bulls	J. Radioanal. Chem. 69, 473 (1982).	Published	MURR/UMC-Chemistry/ UMC-Animal Science
S. Morris D. McKown H. Anderson M. May M. Cordts D. Gebhardt S. Crowson V. Spate	The Determination of Sel- enium in Samples Having Medical and Nutritional In- terest Using A Fast Instru- mental Neutron Activation Analysis Procedure	Selenium in Biology and Medicine J.E. Spallholz, J.L. Martin and H.E. Ganther (Ed.) Avi Pub. Co. Inc., West Port Connecticut pp. 438-448).	Published	MURR/ Stephens College
D. James C. Thompson	Search for Uranium in High Purity Silicon	J. Radioanal. Chem., <u>72</u> (1982).	Published	Texas A & M - Center for Trace Characterization
V. Spate S. Morris S. Langhorst	Grab Sample Measurement of AR-41 in Air at the Univer- sity of Missouri Research Reactor	J. Health Physics	Submitted	MURR
J. W. Farmer C.D. Lamp J.M. Meese	Transient Charge Spectroscopy- A New Deep Level Technique	Appl. Phys. Letters	Submitted	MURR/UMC-Physics

PUBLICATIONS FROM USE OF MURR -- JULY 1981 - JUNE 1982

<u>AUTHOR</u>	<u>TITLE</u>	<u>JOURNAL</u>	<u>STATUS</u>	<u>CAMPUS/DEPARTMENT</u>
V. Linn S. Morris	Selenium, Chromium and Serum Lipids in Older American Women	Selenium in Biology and Medicine J.E. Spallholz, J. L. Martin and H.E. Ganther (Ed.) Avi Pub. Co., Inc. West Port Connecticut, pp. 521-525 (1980).	Published	MURR/Purdue- Human Nutrition
E. Heimann M. Smith S. Morris T. Gall R. Elmore R. Morrow	Relationships Among Spermatozoal Abnormalities and the Selenium Concentration of Blood Plasma, Semen, and Reproductive Tissues in Young Bulls	Animal Reproduction Science	Submitted	MURR/UMC- Animal Science, Vet. Medicine
E. Heimann M. Smith S. Morris T. Gall R. Elmore R. Morrow	Seminal Selenium Concentrations and Spermatozoal Abnormalities in Beef Bulls	Theriogenology	Submitted	MURR/UMC- Animal Science, Vet. Medicine
W. Ehmann W. Markesbesy T. Hossian M. Aluddin D. Goodin	Trace Elements in Human Brain Tissue by INAA	J. Radioanal. Chem., <u>70</u> , 57 (1982).	Published	Univ. of Kentucky - Chemistry
A. Wright G. Etherington E. Desa R. Sinclair G. Connell J. Mikkelsen Jr.	Neutron Amorphography	J. Non-Crystalline Solids <u>49</u> , 63-102, 1982	Published	Univ. of Reading - Physics/MURR/Harwell Material Physics/ Xerox Palo Alto Research

PUBLICATIONS FROM USE OF MURR -- JULY 1981 ~ JUNE 1982

<u>AUTHOR</u>	<u>TITLE</u>	<u>JOURNAL</u>	<u>STATUS</u>	<u>CAMPUS/DEPARTMENT</u>
L. Oliver, R. Ballad, O. Manuel	129I In Missouri	Health Physics Vol. 42, No. 4 (April), pp. 425-432, 1982	Published	UMR-Chemistry
W. Ehmann, W. Markesbery, T. Hossian, M. Aluddin, D. Goodin	Brain Trace Element Studies of Aging and Disease by INAA	Transactions of the American Nuclear Society, 41, pp. 201-207 (1982)	Published	University of Kentucky- Chemistry
R. Birtcher, J. Meese, T. Scott	Spallation Neutron Damage In Group IV, III-V and II-VI Semiconductors at 5 K	4th Neutron Transmutation Doping Conference, Washington, DC, June 1982	Submitted	Materials Science Division-Argonne National Lab/MURR



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<u>AUTHOR</u>	<u>TITLE</u>	<u>CONFERENCE</u>	<u>CAMPUS/DEPARTMENT</u>
G. Ehrhardt	A Comparison of In-115m and Ga-67 as Abscess Imaging Agents	Second International Symposium on Radiopharm., Chicago, IL, September 1981	MURR
R. Brugger, S. Loyalka	A Possible Manifestation of the Change in the Doppler Effect Caused by Chemical Binding	ANS Meeting, San Francisco, CA, November 1981	MURR/UMC-Nuclear Engineering
R. Brugger, W. Miller, J. Sohl, J. Russell, D. Noonan	Evaluation of a Neutron Cancer Therapy Beam at MURR	ANS Meeting, San Francisco, CA, November 1981	MURR/UMC-Nuclear Engineering
M. Glascock	Applications of Neutron Capture Reactions and Prompt Gamma-Rays	International Symposium on Neutron Capture Gamma-Rays and Related Topics, Grenoble, France, Sept. 1981	MURR
J. Epperson, D. Mildner, H. Chen	The Decomposition of a Ni-Si Alloy (12.5 at % Si)	Proc. of Symposium on Neutron Scattering, Argonne National Laboratory, August 1981	Argonne National Lab-Materials Science/MURR/UMC-Physics/University of Illinois-Metallurgical and Mining Engineering
S. Werner, G. Shirane, C. Fincher, B. Grier	Excitations of the Spin Density Wave in Pure Chromium	Proc. of Symposium on Neutron Scattering, Argonne National Laboratory, August 1981	UMC-Physics/Brookhaven National Laboratory
T. Spalding, M. Glascock, R. Gale, S. Manahan	A Trace Element Study In Coal and Coal-Derived Solids by Neutron Activation Techniques	Missouri Academy of Sciences Missouri School of Ozarks, Branson, April 23-24 1982	UMC-Chemistry/MURR

PAPERS PRESENTED FROM THE USE OF MURR -- JULY 1981 - JUNE 1982

<u>AUTHOR</u>	<u>TITLE</u>	<u>CONFERENCE</u>	<u>CAMPUS/DEPARTMENT</u>
R. Word, S. Werner	Neutron Interferometric Measurement of the Real Part of the Scattering Lengths of Natural and Isotropically Pure $^{149}\text{Sm}$ as a Function of Energy	Proc. of Symposium on Neutron Scattering, Argonne National Laboratory, August 1981	UMC-Physics/MURR
C. Crowder, B. Kebe, W. James, W. Yelon	A Powder Neutron Diffraction Study of Antiferromagnetism in $\text{Er}_6\text{Mn}_{23}\text{D}_{23}$	Proc. of Symposium on Neutron Scattering, Argonne National Laboratory, August 1981	UMR-Chemistry and Materials Research/MURR
C. McCarthy, C. Tompson, F. Ross, Z. Fisk	Structure and Magnetic Properties of $\text{TbB}_4$	Proc. of Symposium on Neutron Scattering, Argonne National Laboratory, August 1981	UMC-Physics/MURR/U. of California, San Diego
M. Jolles, P. Hink	Analysis of Fatigue Damage Using Small-Angle Neutron Scattering	International Conf. on Quantitative Measurement of Fatigue Damage, June 1982	UMC-Mechanical Engineering
G. Schupp, L. Crow, S. Nha, W. Yelon	Quasi-Elastic Scattering with Intense Mössbauer Sources	Midwest Solid State Conf., Argonne, IL, September 1981	UMC-Physics/MURR
H. Chen, J. Epperson, D. Mildner	On the Decomposition of an $\alpha$ -Phase Ni-Si Alloy	1981 Metallurgical Soc. Fall Meeting, Louisville, KY, October 1981	University of Illinois-Metallurgical and Mining Engineering/Argonne National Lab-Materials Science/MURR/UMC-Physics
A. Krawitz, J. Brune, M. Schmank	Measurements of Stress in the Interior of Solids Using Neutrons	Proc. of 28th Sagamore Army Materials Research Conf., Lake Placid, NY, July 1981	UMC-Mechanical Engineering

PAPERS PRESENTED FROM THE USE OF MURR -- JULY 1981 - JUNE 1982

<u>AUTHOR</u>	<u>TITLE</u>	<u>CONFERENCE</u>	<u>CAMPUS/DEPARTMENT</u>
A. Krawitz, E. Drake, R. DeGroot, C. Vasel, W. Yelon	Neutron Diffraction Studies of Cemented Carbide Composites	Proc. of International Conf. on the Science of Hard Materials, Jackson, WY, August 1981	UMC-Mechanical Engineering/MURR
E. Kenik, A. Krawitz, E. Drake	Deformation Substructure in Cemented WC-Co Materials	39th Annual Proc. Electron Microscopy Soc. of America, Atlanta, GA, September 1981	UMC-Mechanical Engineering/Oak Ridge National Lab/Reed Rock Bit Co.
J. Farmer, J. Meese	Deep Level Transient Spectroscopy of Neutron Irradiated Semiconductors	International Conf. on Neutron Irradiation Effects, Argonne, IL, November 1981	MURR
T. Spalding	PGNAA of Boron Sorbed to Coal and Coal-Derived Solids	Midwest Regional ACS Meeting, Columbia, MO, November 1981	UMC-Chemistry/MURR
J. Meese	Processing of Semiconductor Materials and Devices	International Conf. on Neutron Irradiation Effects, Argonne, IL, November 1981	MURR
W. Yelon, L. Crow, S. Nha, C. Holmes, G. Schupp	An Intense Mössbauer Scattering Apparatus	International Conf. on Mossbauer Effect, Jaipur, India, December 1981	MURR/UMC-Physics
G. Ehrhardt, W. Goeckeler, W. Volkert, D. Kapsch	Practical Development and Applications of the Cd-115/In-115m Generator	Midwest Regional ACS Meeting, Columbia, MO, November 1981	MURR/UMHSC-Radiology/H.S.T. Veterans Administration Hospital
W. Goeckeler, D. Troutner, W. Volkert, G. Ehrhardt	Complexes of In-115m with Some Polyamino-Carboxylic Acids	Midwest Regional ACS Meeting, Columbia, MO, November 1981	MURR/UMC-Chemistry H.S.T. Veterans Administration Hospital

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<u>AUTHOR</u>	<u>TITLE</u>	<u>CONFERENCE</u>	<u>CAMPUS/DEPARTMENT</u>
D. Alger	Draft Standard for Emergency Plans for Research Reactors	ANS Standards Committee, Winter Meeting ANS, Nov. 1981	MURR
W. Pearson, E. Schlemper, F. Ross	X-Ray and Neutron Diffraction Study of Valence Electron Density in Potassium Chromate, $K_2CrO_4$	American Crystallographic Assoc. Winter Meeting, NBS, Washington, DC, March 1982	UMC-Chemistry/MURR
F. Ross, W. Yelon	Solid State Detectors	American Crystallographic Assoc. Winter Meeting, NBS, Washington, DC, March 1982	MURR
E. Heimann, D. Trokey, W. Loch, S. Morris, W. Pfander	Selenium Concentration and $^{75}Se$ Retention in Tissues from Pony Stallions With and Without Supplemental Se	Animal Science Meeting, University of Guelph, Guelph, Ontario, Canada, August 1982	MURR/UMC Animal Science
J. Hancock, R. Morrow, M. Smith, S. Morris	Selenium Supplementation Using Yeast: Blood and Tissue Levels	Animal Science Meeting, University of Guelph, Guelph, Ontario, Canada, August 1982	MURR/UMC Animal Science
J. Hancock, R. Morrow, M. Smith, R. Elmore, S. Morris	Selenium Supplementation and Semen Quality in Young Bulls	Animal Science Meeting, University of Guelph, Guelph, Ontario, Canada, August 1982	MURR/UMC Animal Science
J. Farmer	Defect Profiling with Transient Current Spectroscopy	American Physical Society March Meeting, Dallas, TX, March 1982	MURR
D. Mildner, P. Hall	Small-Angle Scattering Studies of Shale Rock	American Physical Society March Meeting, Dallas, TX, March 1982	MURR/UMC-Physics

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<u>AUTHOR</u>	<u>TITLE</u>	<u>CONFERENCE</u>	<u>CAMPUS/DEPARTMENT</u>
R. Berliner, M. Arif, S. Werner, J-A. Xu	Neutron Pendellosung Interference Effects in InSb	Conf. on the 50th Anniversary of the Discovery of the Neutron, Cambridge, England, September 1982	MURR/UMC-Physics
R. Berliner	Position Sensitive Detectors and Data Handling Systems at MURR	Workshop on Position Sensitive Detectors of Thermal Neutrons, ILL, Grenoble, October 1982	MURR
J. Lindsay, D. Alger	MTF Analysis of MURR Real-Time Neutron Radiography Facility	Midwest ANS Student Conference, April 1982	MURR/UMC-Nuclear Engineering
J. Lindsay, D. Alger	Optimization of Neutron to Light Converter Screens for Real-Time Neutron Radiography	Midwest ANS Student Conference, April 1982	MURR/UMC-Nuclear Engineering
W. Kennedy, J. Pottruff	Gamma Transmission Tomography: Preliminary Data	Regional Amer. Assoc. of Physics in Medicine, Columbia, Mo., March 1982	UMC-Nuclear Engineering/ Medical Physics
A. Levi, A. Burger, M. Schieber, L. Vanden Berg, W. Yelon, R. Alkire	Improved Fabrication of HgI <sub>2</sub> Nuclear Radiation Detectors by Machine Cleaving	Workshop on HgI <sub>2</sub> , Jerusalem, June 6-10, 1982	Hebrew University- Jerusalem/ MURR/UMR- Chemistry
R. Brugger, A. Taylor, C. Olson, J. Goldstone	An Inelastic Neutron Spectrometer That Operates in the 1-6eV Incident Neutron Energy Range	Annual APS Meeting, San Francisco, California, January 1982	MURR/Los Alamos National Lab
A. Taylor, R. Brugger	Inelastic Neutron Scattering of 1-7eV Neutrons	Annual APS Meeting, San Francisco, California, January 1982.	Los Alamos National Lab/ MURR

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<u>AUTHOR</u>	<u>TITLE</u>	<u>CONFERENCE</u>	<u>CAMPUS/DEPARTMENT</u>
R. Brugger, A. Taylor, R. Silver, J. Goldstone, C. Olson	Inelastic Neutron Scattering With 1-15eV Neutrons	IVth ICANS Meeting, ANL June 28, July 2 1982	MURR/Los Alamos National Lab
J. Russell, D. Noonan, R. Brugger	Epithermal Neutron Beams for Medical Applications	Tenth Biennial Topical Conference on Reactor Operating Experience, Cleveland, Ohio, August 1981	Georgia Inst. of Technology/MURR
R. Brugger, S. Loyalka	A Possible Manifestation of the Change in the Doppler Effect Caused by Chemical Binding	ANS Annual Meeting, San Francisco, California, November 1981	MURR/UMC-Nuclear Engineering
R. Brugger, A. Taylor, R. Silver, J. Goldstone, C. Olson	Inelastic Neutron Scattering With 1-15eV Neutrons	Conference on The Uses of Pulsed Neutron Sources in Condensed Matter Research, Clarendon Lab, Oxford, England, September 1982	MURR/Los Alamos National Lab
D. Liu	A Study of Polycarbonate by Small-Angle Neutron Scattering	Collegiate Division of the Missouri Academy of Sciences, Lookout Point-School of the Ozarks, April 1982	MURR
R. Word, G. Trammell	The Potential of Resonant Neutron Scattering as a Condensed Matter Probe	Proc. of Symposium on Neutron Scattering, Argonne National Laboratory, August 1981	UMC-Physics/Rice University-Physics
V. Bolie, R. Brugger, R. Stever	A Chopper at WNR	IVth ICANS Meeting, ANL June 28, July 2 1982	UNM/MURR/Los Alamos

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<u>AUTHOR</u>	<u>TITLE</u>	<u>CONFERENCE</u>	<u>CAMPUS/DEPARTMENT</u>
J. Farmer	Application of DLTS to Neutron Irradiated Silicon	Neutron Transmutation Doping Conference, Washington, D.C., June 1982	MURR
O. Olson	Control of Radiation During Replacement of the Beryllium Reflector at the University of Missouri Research Reactor	Health Physics Society Annual Meeting, June 1982	MURR
A. Jones	Altered Electrolyte Transport During Aldosterone-induced Hypertension in Rats	Cellular Handling of Ions, Transmitter Release, Mineralocorticoids, Smooth Muscle Contractility and Hypertension, Goteborg, Sweden, 1981	UMHSC-Physiology
A. Jones	Membrane Changes in Ion Transport During Transport Hypertension	Membrane in Hypertension, Paris, France, 1981	UMHSC-Physiology
A. Jones	The Effects of DIDS and Anion Substitution on Aortic Cl-36 Turnover in Aldosterone-induced Hypertensive Rats	Recent Advances in Hypertension Mechanisms, Acapulco, Mexico, 1982	UMHSC-Physiology
A. Krawitz	Stress Measurements in the Interior of Solids Using Neutron Diffraction	AIME Annual Meeting, Dallas, TX, February 1982	UMC-Mechanical Engineering
J. Litton	Health Physics Information Handling - One System	Mid-America Chapter of the Health Physics Society, Columbia, MO, May 1982	MURR
W. Kennedy, L. Achtemeier	Radiation-Induced Changes in NMR Relaxation Times of Tissue Protons	Regional Amer. Assoc. of Physics in Med., March 1982	UMC-Nuclear Engineering Medical Physics
W. Kennedy, C. Ikoro	Comparison of Bismuth Germanate (BGO) and NaI(Tl) for high Energy PGNAAs	Regional Amer. Assoc. of Physics in Med. Nov. 7, 1981	UMC-Nuclear Engineering Medical School



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<u>AUTHOR</u>	<u>TITLE</u>	<u>CONFERENCE</u>	<u>CAMPUS/DEPARTMENT</u>
S. Growcock	Comparison of Actual and Statistical Neutron Energy Spectra	Mid-America Chapter of the Health Physics Society, Columbia, MO, May 1982	MURR
O. Olson	MURR Health Physics as a Learning Experience	Mid-America Chapter of the Health Physics Society, Columbia, MO, May 1982	MURR
S. Stewart	Cost Effectiveness of a Low-Level Radwaste Laboratory at MURR	Mid-America Chapter of the Health Physics Society, Columbia, MO, May 1982	MURR
C. Thompson, J. Meese	Neutron Irradiation Processing to Reduce Soft Errors in 16K Dynamic RAMS	IEEE Conf. on Nuclear and Space Radiation Effects, Seattle, Washington, July 1981	Burroughs Corp/ MURR
S. Gunn, J. Meese	High Precision Irradiation Facilities at the University of Missouri Research Reactor	American Nuclear Soc. Tenth Biennial Conf. on Reactor Operating Experience, Cleveland, Ohio, Oct. 1981	MURR
E. Haller, N. Palaie, M. Radder	NTD Germanium: A Novel Material for Low Temperature Boletometers	Fourth International Transmutation Doping Conference, Washington, D.C. June 1-3, 1982	U. of California- Lawrence Berkley Labor- atory Kitt Peak Obser- vatory
R. Birtcher, J. Meese, T. Scott	Spallation Neutron Damage in Group IV, III-V and II-VI Semiconductors at 5K	Fourth International Transmutation Doping Conference, Washington, D.C. June 1-3, 1982	MURR
C. Graham, J. Vogt	Characterization of Obsidian Source Samples VIA INAA	ANS Student Conference, Columbia, April 2, 1982	UMC-Nuclear Engineering MURR

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<u>AUTHOR</u>	<u>TITLE</u>	<u>CONFERENCE</u>	<u>CAMPUS/DEPARTMENT</u>
J. Farmer, J. Nugent	Transient Current Spectroscopy of Neutron Irridated Silicon (invited)	Fourth International Transmutation Doping Conference, Washington, D.C. June 1-3, 1982	MURR/Argonne National Lab
S. Thaler, H. Chandrasekhar, M. Chandrasekhar, J. Meese	A Detailed Annealing Study of NTD Silicon Utilizing Raman Scattering	Fourth International Transmutation Doping Conference, Washington, D.C. June 1-3, 1982	MURR/UMC-Physics
W. Kennedy L. Achtemeier	Developments in Boron Neutron Capture Therapy	Regional Amer. Assoc. of Physics in Med. Nov. 7, 1981	UMC-Engineering
B. Stone, L. Shive, A. Henry, S. Gunn	Calibration of the Photoluminescence Technique for Determination of Phosphorous in Silicon by NTD	Fourth International Transmutation Doping Conference, Washington, D.C. June 1-3, 1982	MURR/Monsanto
H. Kramer	Swirls in NTD Float-zone Silicon	Fourth Internation Transmutation Doping Conference, Washington, D.C. June 1-3, 1982	MURR/Monsanto
J. Watson, B. Covington	Annealing Study of NTD Si(B)	Fourth International Transmutation Doping Conference, Washington, D.C. June 1-3, 1982	MURR/Sam Houston State University
S. Langhorst, S. Morris, W. Miller	Investigation of Iodine Loading onto Charcoal Filters Used in Air Sampling Equipment	ANS Student Conference, Columbia, Mo., April 2, 1982	UMC-Nuclear Engineering MURR/ UMC-Chemistry

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<u>AUTHOR</u>	<u>TITLE</u>	<u>CONFERENCE</u>	<u>CAMPUS/DEPARTMENT</u>
K. Carneiro, L. Passell, W. Thomlinson, H. Taub	Neutron Diffraction from the Second Layer of $^4\text{He}$ on Graphite	16th International Conference on Low Temperature Physics Los Angeles, CA, August 1981	Brookhaven National Laboratory/UMC-Physics
E. Heimann, T. Gall, M. Smith, S. Morris, R. Morrow, R. Elmore	Selenium Levels in Tissues, Semen, and Blood Plasma of Yearling Bulls	73rd Annual Meeting of the American Society of Animal Science, North Carolina State University, Raleigh July 26-29, 1981	UMC-Animal Science/ MURR/UMC-Chemistry Vet. Medicine
E. Heimann, T. Gall, M. Smith, R. Morrow, R. Elmore, R. Youngquist, S. Morris	Selenium Concentration and Semen Quality in Young Bulls	73rd Annual Meeting of the American Society of Animal Science, North Carolina State University, Raleigh July 26-29, 1981	UMC-Animal Science/ MURR/UMC-Chemistry, Vet. Medicine
E. Heimann, M. Smith, S. Morris, J. Sikes, R. Morrow	Analysis of Selenium in Bovine Semen Using Neutron Activation Analysis	73rd Annual Meeting of the American Society of Animal Science, North Carolina State University, Raleigh July 26-29, 1981	UMC-Animal Science/ MURR/UMC-Chemistry, Dairy Science
M. Taylor, W. Loch, E. Heimann, S. Morris	Effect of Nitrogen Fertilization and Selenium Supplementation on the hair Selenium Concentration in Pregnant Pony Mares Grazing Fescue	73rd Annual Meeting of the American Society of Animal Science, North Carolina State University, Raleigh July 26-29, 1981	UMC-Animal Science/ MURR
V. Flynn, S. Morris, T. Baxter	The Determination of Selenium in the Pituitary Gland and its Hormones	Missouri Academy of Sciences Missouri School of Ozarks, Branson, April 23-24 1982	UMC-Chemistry/MURR

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<u>AUTHOR</u>	<u>TITLE</u>	<u>CONFERENCE</u>	<u>CAMPUS/DEPARTMENT</u>
K. Bhuyan S. Morris T. Baxter	Selenium Status in the Eye	Assoc. for Research in Vision and Ophthalmology, Orlando, Florida, May 1982	Mt. Sinai School of Medicine/UMC-Chemistry/MURR
C. Callahan, H. Anderson, S. Morris	The Determination of Selenium in Human Milk, Market Milk and Commercial Infant Formula	Missouri Academy of Sciences, Missouri School of Ozarks, Branson, April 23-24 1982	Stephens College/MURR/UMC-Chemistry
C. Kanatzer, H. Anderson, S. Morris	The Determination of Br, Ca, Cl, K, Mg, and Na Via NAA in Human Milk, Market Milk and Commercial Infant Formula	Missouri Academy of Sciences, Missouri School of Ozarks, Branson, April 23-24 1982	Stephens College/MURR/UMC-Chemistry
S. Langhorst, S. Morris, W. Miller	Analysis of Loading Iodine onto Char-Coal Filters	American Nuclear Society, San Francisco, CA, Nov 29-Dec 3, 1981	UMC-Nuclear Engineering/MURR/UMC-Chemistry
V. Spate, S. Morris, S. Langhorst	Argon-41 Measurements At a Research Reactor	American Nuclear Society, San Francisco, CA, Nov 29-Dec 3, 1981	UMC-Nuclear Engineering/MURR/UMC-Chemistry
H. Anderson, S. Morris, C. Kanatzer	Comparison of Minor and Trace Elements in Human Milk, Market Milk and Commercial Infant Formula	Midwest American Chemical Society Meeting, Columbia MO, Nov., 1981	Stephens College/MURR/UMC-Chemistry
C. McKibben	New Research Instruments at MURR	American Nuclear Society, Cleveland, Ohio, August 1981	MURR
S. Gunn J. Meese	High Precision Irradiation Facilities at MURR	American Nuclear Society, Cleveland, Ohio, August 1981	MURR
D. McGinty C. McKibben	MURR's Indoctrination Program	American Nuclear Society, Cleveland, Ohio, August 1981	MURR

THESES COMPLETED RELATED TO MURR -- JULY 1981 - JUNE 1982

<u>STUDENT</u>	<u>DEGREE</u>	<u>CAMPUS/DEPARTMENT</u>	<u>ADVISOR</u>	<u>MURR INTERFACE</u>	<u>TITLE</u>
E. Charlson	Ph.D.	UMC-Electrical Engineering	J. Meese	J. Meese	Silicon Oxynitride MIS Solar Cells
C. Vasei	M.S.	UMC-Mechanical and Aerospace Engineering	A. Krawitz	W. Yelon	The Role of Binder Deformation Mechanisms on Mechanical Properties in WC-Co Cemented Carbide Composites
M. DeMarco	Ph.D.	U. of Cincinnati-Physics	S. Jha	G. Ehrhardt	Measurement of Hyperfine Magnetic Fields in Ni <sub>2</sub> MnY Heusler Alloys by Time Differential Perturbed Gamma-Gamma Angular Correlation
A. Pringle	Ph.D.	UMC-Physics	S. Werner	R. Brugger	Small-Angle Neutron Scattering from High Impact Polystyrene
W. Goeckeler	M.A.	UMC-Chemistry	D. Troutner	G. Ehrhardt	Some Complexes of Indium with Several Polyaminocarboxylic Acid Ligands as Potential Radiopharmaceuticals
D. Pal	Ph.D.	UMC-Chemistry	D. Troutner	G. Ehrhardt M. Glascock	Independent Yields of Y and La from Fission of U-233 and Cf-249
J. Soh1	M.S.	UMC-Nuclear Engineering	W. Miller	R. Brugger	Experimental Benchmarking of the Bonner Sphere Spectrometer Using Filtered Neutron Beams
R. DeGroot	M.S.	UMC-Mechanical and Aerospace Engineering	A. Krawitz	D. Mildner	Neutron Diffraction Study of WC-Co Wire Drawing Dies
R. Alkire	Ph.D.	UMR-Chemistry	W. James	W. Yelon	Design and Performance of a Gamma-Ray Diffractometer at 0.12Å

THESES COMPLETED RELATED TO MURR -- JULY 1981 - JUNE 1982

<u>STUDENT</u>	<u>DEGREE</u>	<u>CAMPUS/DEPARTMENT</u>	<u>ADVISOR</u>	<u>MURR INTERFACE</u>	<u>TITLE</u>
J. Nugent	M.S.	UMC-Electrical Engineering	J. Meese	J. Meese/ J. Farmer	No Thesis Required
D. Warden	Ph.D.	UMHSC-Physiology	A. Jones	G. Ehrhardt	Chloride Transport Mechanisms and the Temperature Dependence of Ion Exchange in Vascular Smooth Muscle
S. Schlegel	M.A.	UMC-Chemistry	D. Troutner	S. Morris	Use of Ca-47/Ca-45 Ratios in Determination of Ca-46 in Fecal Samples by Activation Analysis
G. Trott	Ph.D.	UMC-Physics	H. Taub		Study of Orientational Order of Ethane and Butane Films Adsorbed on Graphite by Elastic Neutron Scattering
S. Loerch	Ph.D.	Univ. of Illinois-Urbana	L. Berger	J. Carni	Factors Affecting Degradation and Utilization of Protein Sources by Ruminants
S. Ricke	M.S.	Univ. of Illinois-Urbana	L. Berger	J. Carni	Effect of Lasalocid and Monensin on Nutrient Digestion Metabolism and Rumen Characteristic of Sheep and Performance of Cattle
S. Plegge	Ph.D.	Univ. of Illinois-Urbana	L. Berger	J. Carni	Effect of Roasting on Soybean Meal Utilization by Ruminants
H. Jung	Ph.D.	Univ. of Illinois-Urbana	L. Berger	J. Carni	Effect of Phenolics on Nutrient Utilization by Ruminants

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<u>STUDENT</u>	<u>DEGREE</u>	<u>CAMPUS/DEPARTMENT</u>	<u>ADVISOR</u>	<u>MURR INTERFACE</u>	<u>TITLE</u>
D. Hefner	Ph.D.	Univ. of Illinois-Urbana	L. Berger	J. Carni	Iso-Acid Supplementation of Corn-Crop Residue for Ruminants
J. Carni	M.S.	UMC-Chemistry	R. Koirtyonann	S. Morris	Stable Tracer Iron-58 Technique for Iron Utilization Studies
M. Liebel	Ph.D.	UMC-Biochemistry	A. White	S. Morris M. Glascock	Inhibition of the Soluble Guanylate Cyclase from Rat Lung by Sulfated Polyanions
D. Trokey	M.S.	UMC-Dairy Science	C. Merilan	S. Morris	The Effects of Dead Cells on Living Spermatozoa



FACULTY AND STUDENTS FUNDED BY MURR -- JULY 1981 - JUNE 1982

<u>NAME</u>	<u>CAMPUS-DEPARTMENT</u>	<u>F.T.E.</u>	<u>POSITION</u>
D. Alger	MURR/UMC-Nuclear Engineering	1.00	Associate Director/Assistant Professor
R. Alkire	UMR-Chemistry	.50	Graduate Research Assistant
C. Anderson	UMC-Electrical Engineering	1.00	Undergraduate Student
H. Anderson	Stephens College	.50	Visiting Professor
M. Arif	UMC-Physics	.50	Graduate Research Assistant
D. Bain	UMC-Mechanical Engineering	.50	Undergraduate Student
D. Balzer	UMC-Mechanical Engineering	.50	Undergraduate Student
D. Baum	UMC-Physics	.50 (summer)	Graduate Research Assistant
S. Benner	UMC-School of Medicine	.50	Graduate Research Assistant
R. Berliner	MURR/UMC-Physics	1.00	Sr. Research Scientist/Assistant Professor
R. Brugger	MURR/UMC-Physics-Nuclear Engineering	1.00	Director/Professor
C. Bryan	UMC-Mechanical Engineering	.50 (summer)	Graduate Research Assistant
J. Carni	MURR	1.00	Sr. Research Specialist
D. Carpenter	UMC-Mechanical Engineering	.50	Undergraduate Student
K. Chapman	UMC-Electrical Engineering	.50	Graduate Research Assistant
E. Clare	UMC-Electrical Engineering	.50	Undergraduate Student
R. Cobean	MURR	1.00	Research Scientist
W. Cone	UMC-Animal Science	1.00 (summer)	Undergraduate Student
M. Crow	UMC-Physics	.50	Graduate Research Assistant
E. Desa	MURR/UMC-Physics	1.00	Post-Doctoral Fellow
P. Doherty	UMC-Mechanical Engineering	.50	Undergraduate Student
A. DuChemin	MURR/UMC-Arts & Sciences-Education	1.00	Undergraduate Student
K. Fair	UMC-Computer Science	.50	Graduate Research Assistant
G. Ehrhardt	MURR/UMHSC-Radiology	1.00	Sr. Research Scientist/Assistant Professor
J. Farmer	MURR/UMC-Physics	1.00	Sr. Research Scientist/Assistant Professor

FACULTY AND STUDENTS FUNDED BY MURR -- JULY 1981 - JUNE 1982

<u>NAME</u>	<u>CAMPUS-DEPARTMENT</u>	<u>F.T.E.</u>	<u>POSITION</u>
P. Fernandez	MURR/UMC-Mechanical Engineering	1.00	Undergraduate Student
E. George	Arizona State University-Physics	1.00 (summer)	Undergraduate Student
M. Glascock	MURR	1.00	Sr. Research Scientist
W. Goeckeler	UMC-Chemistry	.75	Graduate Research Assistant
C. Graham	MURR/UMC-Nuclear Engineering	1.00	Graduate Student
R. Graham	MURR/UMC-Electrical Engineering	1.00	Graduate Student
S. Growcock	MURR/UMC-Nuclear Engineering	1.00	Graduate Student
J. Habing	UMC-Special Education	.50	Undergraduate Student
J. Hagar	UMC-Education	.50	Undergraduate Student
G. Haley	Purdue University-Chemistry	.33	Graduate Research Assistant
P. Hall	MURR/UMC-Physics	1.00	Post-Doctoral Fellow
J. Hancock	UMC-Animal Husbandry	.50	Graduate Research Assistant
J. Hartzfeld	UMC-Chemical Engineering	.50	Undergraduate Student
E. Heimann	UMC-Animal Husbandry	.50	Graduate Research Assistant
G. Holroyd	UMC-Civil Engineering	.50	Undergraduate Student
K. Hunzicker	UMC-Medical School	.50	Graduate Research Assistant
C. Hubach	UMR-Physics	1.00	Undergraduate Student
C. Ikoro	UMC-Nuclear Engineering	.50	Graduate Research Assistant
J. Jungermann	UMC-Mechanical Engineering	.50	Undergraduate Student
C. Kanatzar	Stephen College	1.00 (summer)	Undergraduate Student
H. Kaiser	MURR/UMC-Physics	1.00	Post-Doctoral Fellow
J. Korsah	UMC-Nuclear Engineering	.50	Graduate Research Assistant
K. Kothari	UMC-Nuclear Engineering	.25	Undergraduate Student
T. Kramer	UMC-Mechanical Engineering	.50	Graduate Research Assistant

FACULTY AND STUDENTS FUNDED BY MURR - JULY 1981 - JUNE 1982

<u>NAME</u>	<u>CAMPUS/DEPARTMENT</u>	<u>F.T.E.</u>	<u>POSITION</u>
E. Kurt	UMC-Industrial Engineering	.50	Undergraduate Student
S. Langhorst	MURR/UMC-Nuclear Engineering	1.00	Graduate Student
J. Lindsay	UMC-Nuclear Engineering	.50	Graduate Research Assistant
D. Litton	UMC-Mechanical Engineering	.50	Undergraduate Student
J. Litton	MURR/UMC-Arts & Sciences	1.00	Undergraduate Student
D. Liu	UMC-Electrical Engineering-Physics	.50	Undergraduate Student
C. Marchand	UMC-Business	.50	Undergraduate Student
R. McCann	MURR/UMC-Electrical Engineering	1.00	Undergraduate Student
D. McGinty	MURR/UMC-Nuclear Engineering	1.00	Graduate Student
J. McKibben	MURR/UMC-Nuclear Engineering	1.00	Graduate Student
J. Meese	MURR/UMC-Physics-Electrical Engineering	1.00	Sr. Research Scientist/Associate Professor
W. Meyer	MURR/UMC-Electrical Engineering	1.00	Graduate Student
D. Mildner	MURR/UMC-Physics	1.00	Sr. Research Scientist/Assistant Professor
S. Morris	MURR/UMC-Chemistry	1.00	Sr. Research Scientist/Assistant Professor
R. Myers	UMC-Electrical Engineering	.50	Undergraduate Student
W. Pearson	UMC-Chemistry	.50	Graduate Research Assistant
C. Petty	UMC-Electrical Engineering	.50	Graduate Research Assistant
M. Pohlman	UMC-Nuclear Engineering	.50	Graduate Research Assistant
A. Pringle	UMC-Physics	.50	Graduate Research Assistant
K. Rausch	UMC-Agricultural Engineering	.50	Undergraduate Student
F. Ross	MURR/UMC-Chemistry	1.00	Sr. Research Scientist/Associate Professor
S. Schlegal	UMC-Chemistry	.50	Graduate Research Assistant
J. Schoenbeck	UMC-Mechanical Engineering	.50	Undergraduate Student
M. Sohi	UMC-Mechanical Engineering	.50	Undergraduate Student
J. Sohl	UMC-Nuclear Engineering	.50	Graduate Research Assistant

FACULTY AND STUDENTS FUNDED BY MURR -- JULY 1981 - JUNE 1982

<u>NAME</u>	<u>CAMPUS/DEPARTMENT</u>	<u>F.Y.E.</u>	<u>POSITION</u>
T. Spalding	UMC-Chemistry	.50	Undergraduate Student
S. Springli	UMC-Mechanical Engineering	.50	Undergraduate Student
C. Steinhaus	UMC-Mechanical Engineering	.75	Undergraduate Student
R. Stewart	MURR/UMC-Arts & Sciences	1.00	Undergraduate Student
S. Stierwalt	MURR/UMC-Electrical Engineering	1.00	Undergraduate Student
J. Sudol	MURR/UMC-Electrical Engineering	1.00	Graduate Student
P. Trader	UMC-Anthropology	.20	Graduate Research Assistant
J. Tunink	MURR/UMC-Electrical Engineering	1.00	Undergraduate Student
I. Ukpong	UMC-Mechanical Engineering	.50	Graduate Student
J. Van Reed	UMC-Forestry	.50	Undergraduate Student
S. Vickroy	UMC-Mechanical Engineering	.50	Undergraduate Student
J. Vogt	MURR/UMC-Nuclear Engineering	1.00	Program Director/Professor
T. Warner	MURR/UMC-Physics	1.00	Undergraduate Student
R. Whitaker	UMC-Electrical Engineering	.50	Undergraduate Student
W. Yelon	MURR/UMC-Physics	1.00	Group Leader/Associate Professor
M. Yethiraj	UMC-Physics	.50	Graduate Research Assistant

RESEARCH EQUIPMENT PROCURED BY MURR -- JULY 1981 - JUNE 1982

<u>DESCRIPTION</u>	<u>SOURCE OF FUNDS</u>	<u>ESTIMATED VALUE</u>	
		<u>MURR</u>	<u>OUTSIDE SOURCE</u>
Nuclear Data Sample Changer Interface Module	MURR	\$ 905	
Disk Controller Drives	MURR	2,766	
Do-All Belt Grinder	MURR	1,074	
Ortec Power Supply	NSF		\$ 671
Horizontal Centrifugal Pump	MURR	1,185	
Computer Floppy Disk Drive	MURR	6,010	
Ionization Chamber	MURR	5,605	
Pulse Height Analyzer	NSF		32,157
Video Computer Terminal	MURR	1,375	
Plotter	Monsanto		1,994
Plug-In Amplifier	MURR	1,115	
Microprocessor System Board	MURR	709	
Centrifugal Pump	UMCa		20,369
Monitor-Calibrator	MURR	3,520	
Centronics Printer	NSF		1,545
Survey Meter	MURR	1,150	
Ionization Chamber	MURR	5,110	

RESEARCH EQUIPMENT PROCURED BY MURR -- JULY 1981 - JUNE 1982

<u>DESCRIPTION</u>	<u>SOURCE OF FUNDS</u>	<u>ESTIMATED VALUE</u>	
		<u>MURR</u>	<u>OUTSIDE SOURCE</u>
Multichannel Analyzer	MURR	\$ 12,375	
Constant Temperature Bath	UM Grant		\$ 130
Spectrophotometer With Analyzing Crystal Shield	Argonne National Lab.		40,965
Interface Between Teletype and Three Axis ANL	Argonne National Lab.		1,502
Stepping Motor Drive Control	Argonne National Lab.		1,502
Data Acquisition Control	Argonne National Lab.		1,502
Power Supply	Argonne National Lab.		1,502
Helium Liquid Unit	Argonne National Lab.		7,679
RJE Computer Station and Related Equipment	UMCa		47,000
Harshaw Anti-Compton Analyzer Module	NSF		1,200
Nuclear Data Time Store Digiplex Module	NSF		1,520
Small Angle Neutron Scattering	MURR	3,004	
Coal Sample Holders	MURR	376	

RESEARCH EQUIPMENT PROCURED BY MURR -- JULY 1981 - JUNE 1982

<u>DESCRIPTION</u>	<u>SOURCE OF FUNDS</u>	<u>ESTIMATED VALUE</u>	
		<u>MURR</u>	<u>OUTSIDE SOURCE</u>
Multichannel Pulse-Height Analyzer	UMCa		\$15,000
Compton Gamma-Ray Scattering Spectrometer	MURR	\$10,477	
Quasi-Elastic Gamma-Ray Scattering Spectrometer	MURR	3,084	
Missouri University Gamma-Ray Scattering Spectrometer	MURR	501	



## GRANTS AND CONTRACTS SUPPORTED BY MURR -- JULY 1981 - JUNE 1982

<u>PRINCIPAL INVESTIGATOR/ MURR INTERFACE</u>	<u>GRANT TITLE</u>	<u>AGENCY</u>	<u>AMOUNT</u>	<u>STATUS/PERIOD</u>
J. Meese, J. Farmer	Deep Level Transient Spectroscopy in Neutron Irradiated Elemental Semiconductors	NSF	\$137,988	Rejected
D. Mildner	Measurement of Pore Size Distribution in Oil Shales by Small Angle Neutron Scattering	Phillips Petroleum Company	18,000	Funded 05/81-12/81
A. Krawitz	Texture Studies of Steel Using Neutron Diffraction	American Iron and Steel Institute	29,281	Rejected
H. Leighly, D. Mildner	A Study of Radiation Induced Voids and Their Annealing Behavior by Small Angle Neutron Scattering	Electrical Power Research Institute	25,379	Funded 04/82-05/83
H. Leighly, D. Mildner	Small Angle Neutron Spectrometry Determination of Porosity of Sheet Steel Produced by Powder Metallurgy	Bethlehem Steel Corporation	8,000	Funded 09/81-09/82
D. Miloner, P. Hall	Small Angle Neutron Scattering Studies of Oil Shales	Phillips Petroleum Company	22,737	Rejected
D. Alger, C. McKibben, D. McGinty	Financial Support to Fabricate 39 Fuel Elements	DOE	650,000	Funded 07/81-06/82
M. Prelas, R. Word	Engineering Aspects of Nuclear-Pumped Transfer Lasers	Air Force Office of Research	192,231	Rejected
M. Prelas	Studies of Volume Pumped Lasers	NSF	95,893	Rejected
M. Prelas	Studies of Photolytically Pumped Nuclear Lasers	Nuclear-Pumped Laser Corporation	103,075	Pending

## GRANTS AND CONTRACTS SUPPORTED BY MURR -- JULY 1981 - JUNE 1982

<u>PRINCIPAL INVESTIGATOR/ MURR INTERFACE</u>	<u>GRANT TITLE</u>	<u>AGENCY</u>	<u>AMOUNT</u>	<u>STATUS/PERIOD</u>
J. Farmer	Deep Level Transient Spectroscopy and Positron Annihilation Lifetime Studies of Neutron Damage in Germanium	Research Corporation	\$ 9,500	Funded 11/81-10/82
F. Ross, W. Yelon	Gamma-Ray Diffractometry (MUGS)	NSF	206,890	Submitted
W. Yelon, G. Schupp, J. Mullen	Condensed Matter Studies with Intense Mössbauer Scattering (QUEGS)	NSF	271,788	Submitted
G. Ehrhardt, D. Day, R. Holmes	Phosphorus-32 Labeled Glass Microspheres as a Radiotherapeutic Agent for Liver Malignancies	Weldon Springs	14,950	Funded 04/82-04/83
M. Prelas	Magnetic Fusion Energy Fellowship Program	ORNL	12,000/ Fellowship	Rejected
J. Farmer	Radiation Effects of Solids Studied by Positron Methods	Weldon Springs	24,950	Rejected
D. Mildner	Small Angle Scattering Studies of Oil Shales	ACS Petroleum Research Fund	30,000	Funded 09/82-08/84
D. Mildner, R. Berliner	Acquisition of a Position Sensitive Neutron Detector for a Powder Diffractometer	NSF	15,800	Funded 03/82-06/83
M. Prelas	An Engineering Study of the Dynamics of Chemical Synthesis Mechanisms Under the Influence of Radiation	NSF, GRI	85,627	Pending
M. Prelas, W. Miller, W. Meyer	Acquisition of a Transient Recorder	NSF	28,000	Funded 05/82-04/83

## GRANTS AND CONTRACTS SUPPORTED BY MURR -- JULY 1981 - JUNE 1982

<u>PRINCIPAL INVESTIGATOR/ MURR INTERFACE</u>	<u>GRANT TITLE</u>	<u>AGENCY</u>	<u>AMOUNT</u>	<u>STATUS/PERIOD</u>
J. Farmer, J. Meese	Sponsorship Proposal for Fourth International Neutron Transmutation Doping of Semiconductor	AF OSR and U.S. Army Research Office	\$ 10,000	Rejected
W. Yelon	Small Angle Neutron Scattering Experiments	Exxon Research and Development	6,000	Funded 10/81-09/82
J. Higgins, R. Berliner	Small Angle Neutron Scattering Studies of Polymer Blends	NATO	2,500	Funded 01/82-02/83
D. Mildner	Condensed Matter Research Using Small Angle Neutron Scattering	Division of Materials Research	194,713	Submitted
W. Yelon	Gamma-Ray Scattering	NATO	4,000	Funded 08/81-08/83
W. Yelon	Unrestricted Grant	Monsanto	50,000	Funded 07/81-07/82
Y. Jean, W. Ching, W. Yelon	Compton Scattering Studies of Solids	NSF	250,000	Submitted
W. Volkert, D. Troutner, R. Holmes	Developing Macrocyclic Amines as Tc-99m Imaging Agents	National Cancer Institute	284,919	Funded 03/82-02/85
D. Alger, R. Brugger, C. McKibben	University Reactor Sharing Program	DOE	40,000	Funded 09/81-08/82
S. Morris	Determination of Selenium Levels in Eye Tissue	NIH	20,172	Rejected
C. Williams	Biogenic Amines and the Porcine Stress Syndrome	USDA	150,000	Submitted

## GRANTS AND CONTRACTS SUPPORTED BY MURR -- JULY 1981 - JUNE 1982

<u>PRINCIPAL INVESTIGATOR/ MURR INTERFACE</u>	<u>GRANT TITLE</u>	<u>AGENCY</u>	<u>AMOUNT</u>	<u>STATUS/PERIOD</u>
H. Anderson	Faculty Professional Development Grant	NSF	22,500	Funded 09/81-08/82
S. Werner, W. Yelon	Neutron Scattering Investigations of Transition Metal Sesquioxides	NSF	\$ 72,000	Funded 03/82-02/84
A. Jones	Supersensitivity	NIH	322,952	Submitted
S. Morris	Effect of Diet on Selenium Content in Rats	Weldon Springs	36,652	Rejected
A. White	Swine Colibacillosis: Phamacotherapy for the Heat Stable Toxins	USDA	149,163	Submitted
W. Willett, S. Morris	Prospective Study of Selenium and Cancer in Women	NIH	196,749	Funded 10/82-09/85
H. Mullen	Cellular Mechanisms	NIH	136,563	Pending
A. Krawitz	Initial Study of Cutting Tool Materials	Kennametal Inc.	20,000	Funded 05/81-05/82
H. Taub	Study of the Structure and Dyanmics of Simple Hydrocarbons Adsorbed on Graphite	NSF	53,600	Funded 09/80-08/83
H. Taub	Neutron Scattering Study of the Structure and Dynamics of Adsorbed Hydrocarbons	ACS Petroleum Research Fund	30,000	Funded 09/79-08/82
D. Alger, R. Brugger, C. McKibben	Reactor Sharing	DOE	45,000	Submitted

## GRANTS AND CONTRACTS SUPPORTED BY MJRR -- JULY 1981 - JUNE 1982

<u>PRINCIPAL INVESTIGATOR/ MJRR INTERFACE</u>	<u>GRANT TITLE</u>	<u>AGENCY</u>	<u>AMOUNT</u>	<u>STATUS/PERIOD</u>
F. Ross, E. Schlemper, G. Long	Electron Density Distribution in M(pyridine) <sub>4</sub> Cl <sub>2</sub> Complexes-The Com- bined Analysis of X-Ray, Neutron and Gamma-Ray Diffraction	Weldon Springs	\$ 10,000	Funded 07/81-06/82
W. Willett, S. Morris	Prediagnostic Serum Factors and Cancer Incidence	NIH	884,671	Pending
M. Prelas	The Design, Testing and Demonstra- tion of a Volume Pumped Photolytic Laser Systems the Aid of a Photon Transport Code	NSF	85,643	Rejected
M. Prelas	An Investigation of Engineering Aspects of Nuclear-Pumped Transfer Lasers	NSF	192,231	Pending
D. Cowan	Electron Spin Resonance Dating of Lithics and Archeological Remnants	NSF	72,924	Pending
A. Jones	Hypertension Mechanisms and Vascular Ion Exchange	NIH	398,238	Pending
A. Krawitz	Response of WC-(Co,Ni) Cemented Car- bides to Monotonic and Cyclic Loading	Reed Rock Bit Co.	25,000	Pending
W. Loch	Selenium in Stallion Semen	USDA	25,000	Rejected
S. Morris	Genetic Control of Selenium Accumu- lation in Tall Fescue	USDA	127,632	Rejected
H. Mullen	Antibody Production	NIH	64,255	Pending

## GRANTS AND CONTRACTS SUPPORTED BY MURR -- JULY 1981 - JUNE 1982

<u>PRINCIPAL INVESTIGATOR/ MURR INTERFACE</u>	<u>GRANT TITLE</u>	<u>AGENCY</u>	<u>AMOUNT</u>	<u>STATUS/PERIOD</u>
T. Luckey	Effects of Subradiation	NSF	\$ 63,625	Pending
S. Werner	Neutron Schrodinger Waves	NSF	122,000	Funded 01/80-12/82
M. Glascock	Instrumentation Proposal For The Prompt Gamma-Ray Activation Analysis Facility at MURR	NSF	161,767	No Award
S. Morris	The Role of Selenium in the Reproductive System of the Bull	USDA	149,334	Rejected
S. Morris	The Role of Selenium-glutathiose Peroxidase in the Reproductive System of the Bull	ABA	22,500	Rejected
H. Taub	Neutron Scattering Study of Adsorbed Hydrocarbons	Research Corp.	14,000	Funded 07/81-06/82
H. Taub R. Berliner	Neutron Scattering Study of the Structure and Dynamics of Adsorbed Hydrocarbons	NSF	141,000	Funded 09/79-04/83
M. Evans, S. Morris M. Glascock, J. Carni	Gamma-Ray Spectroscopy Training-Nuclear Power Plant Application	Union Electric	13,950	Funded 11/81-10/82
W. Willett, S. Morris	The Role of Natural Inhibitors in the Prevention of Cancer	NIH	343,748	Pending

GRANTS AND CONTRACTS SUPPORTED BY MJRR -- JULY 1981 - JUNE 1982

<u>PRINCIPAL INVESTIGATOR/ MURR INTERFACE</u>	<u>GRANT TITLE</u>	<u>AGENCY</u>	<u>AMOUNT</u>	<u>STATUS/PERIOD</u>
S. Morris	Trace Elements in Milk	NIH	\$10,698	Funded 07/81-06/82
S. Morris, T. Baxter	Forensic NAA	DPS	18,200	Funded 07/81-06/82
S. Morris, T. Baxter	Forensic NAA	Columbia P.D.	1,500	Funded 07/81-06/82
S. Morris, T. Baxter	Forensic NAA	DPS	17,400	Funded 07/82-06/83
J. Vogt	IPA Research Agreement Fellowship	NBS	33,984	Funded 08/81-07/82
J. Vogt	IPA Research Agreement Fellowship	NBS	14,116	Funded 08/82-10/82
S. Morris, T. Baxter	Nuclear Power Plant Chemistry Training	Union Electric	15,710	Funded 06/82-12/82
A. White, C. Parker T. Veum, G. Zinn	Swine Colibacillosis: Pharmaco- therapy for the Heat Stable Toxins	USDA-SEA	149,163	Pending
S. Morris, T. Clevenger	Chemical Analysis of Environmental Materials for Residues of Trace Ele- ments	Fish and Wildlife Service	10,000	Pending
S. Morris, E. Hinderberger	Analysis of Pan Concentrates	State of Alaska	75,000	Rejected



## GRANTS AND CONTRACTS SUPPORTED BY MURR -- JULY 1981 - JUNE 1982

<u>PRINCIPAL INVESTIGATOR/ MURR INTERFACE</u>	<u>GRANT TITLE</u>	<u>AGENCY</u>	<u>AMOUNT</u>	<u>STATUS/PERIOD</u>
M. Glascock	NSF PGNA A Equipment Grant	NSF	\$27,000	Funded 06/81-10/82
S. Morris	Determination of Selenium in Eye Tissue	NIH-NEI	20,307	Rejected
S. Langhorst	Research for the Improvement of Radio Iodine Monitoring at a Re-Search Reactor	NRC	19,282	Rejected
S. Langhorst	Radioassay of NTD Silicon	Monsanto and Komatsu	32,400	Funded 07/81-06/82
W. Meyer, W. Kennedy K. Logan, P. Lee	DOE Health Physics Fellowships	DOE	10,000	Rejected
W. Kennedy	Neutron Activation-Tomography	NSF	48,000	Rejected
W. Kennedy, K.W. Logan	Spectroscopic and Radiation Damage Comparison of NaI(Tl) and BGO Crystals	Harshaw Chemical Co.	36,554	Pending
W. Kennedy	Radiation-Induced Changes by NMR	UMC-Research Council	4,600	Funded 06/82-06/83

RADIOISOTOPES SUPPLIED BY MURR -- JULY 1981 - JUNE 1982

ISOTOPES PRODUCED OR HANDLED WERE:

Cadmium-109	Molybdenum-99	Tantalum-183
Cadmium-115	Palladium-111	Technetium-99m
Calcium-45	Phosphorous-32	Tellurium-123m
Cerium-141	Potassium-42	Tellurium-129m
Cesium-137	Rubidium-86	Tin-113
Chromium-51	Scandium-46	Tin-119m
Cobalt-58	Selenium-75	Tungsten-183m
Cobalt-60	Silver-109m	Tungsten-185
Copper-64	Silver-110m	Vanadium-52
Hafnium-181	Silver-111	Yttrium-90
Indium-113m	Sodium-24	Zinc-65
Indium-115m	Strontium-85	
Manganese-56	Tantalum-182	

Members of Radioisotope Applications made 153 pneumatic-tube irradiations and produced 146 shipments of the above 37 radionuclides to serve the needs of university research and education as well as those of industry and MURR research. In addition, numerous in-pool irradiations were performed for the same purposes. The following are the major areas of support contribution by Radioisotope Applications:

Service to Medical and Biological Research:

- 105 shipments of K-42 and Na-24 were supplied to the Physiology Department at UMHSC for hypertension research.
- K-42 calibrated sources were supplied to the Dairy Science Department at UMC for calibration of the UMC Whole Body Counter. Additional calibrated samples were provided to measure the deadtime characteristics of the Whole Body Counter.
- An active, intercampus, University-funded project was begun to develop a new means of internal radiation therapy for liver cancer using P-32 labeled microspheres.
- Three shipments of Rb-86 were provided to the Physiology Department at UMHSC for hypertension research.
- Te-123m was provided to the U. of Oklahoma for synthesis of new radiopharmaceuticals.
- A new Cd-109/Ag-109m generator system was invented at MURR for possible use in assessing heart function in humans.
- Cd-109 was supplied to researchers at UMKC for study of the *in vivo* behavior of this radionuclide in the lungs.
- Sn-113 for use in a model generator for gastric emptying studies was supplied to the U. of Texas, Houston.

RADIOISOTOPES SUPPLIED BY MURR -- JULY 1981 - JUNE 1982

Services to Physics Research:

- Numerous Co-60, Cu-64, Zn-65, and Co-58 sources were made and frequently modified for use as X-ray sources in the Physics Department at UMC.
- 12 radioactive BaS and BaO crystal windows were encapsulated for irradiation for the Physics Department at UMC.
- A Ce-141 calibrated source was produced for the Physics Department at UMKC.
- Two high intensity Sn-119m Mossbauer sources were prepared for the Physics Department at Purdue University.
- Sources of Te-129m, Hf-181, Pd-111 and Ag-111 were provided to the U. of Cincinnati for Mossbauer studies.

Service to Education:

- Na-24, In-115m, and Mn-56 sources were prepared for educational use by UMC Health Physics.
- Sources of Cu-64, Ca-45, Y-90, P-32, K-42, Cr-51, Sc-46, Sr-85, and Ce-141 were produced for educational use by the Chemistry Department at UMC.
- A Na-24 source was provided to aid the research project of a nuclear engineering student at MURR.

In-House Service to MURR:

- Na-24 and Co-60 sources were provided to MURR Health Physics for instrument calibration and research and to the electronics shop for instrument analysis purposes.
- K-42 sources were provided to MURR Reactor Chemistry for calibration of the stack monitors.

RADIOISOTOPES SUPPLIED BY MRR -- JULY 1981 - JUNE 1982

Service to Chemistry Research:

- Numerous Mn-56 sources were provided as technetium analogues for the study of cyclam complex chemistry at UMC Chemistry and Harry S. Truman Veteran's Hospital.

Service to Industry:

- Three low intensity calibrated Cs-137 sources were provided to Dow Chemical, Inc., Freeport, Texas.
- Fifteen targets for high-level Na-24 production for use as tracers by power reactors were supplied.

NEUTRON RADIOGRAPHS MADE AT MURR -- JULY 1981 - JUNE 1982

<u>FACULTY/STUDENT</u>	<u>CAMPUS/DEPARTMENT</u>	<u>SUBJECT</u>
D. Alger/J. Lindsay	MURR/Nuclear Engineering	Quality Control Neutron Radiography of Electrical Components for Bendix Corp., Kansas City (109 Radiographs)
D. Alger/J. Lindsay	MURR/Nuclear Engineering	Diagnostic Neutron Radiography of Molybdenum Heat Exchange for Hughes Aircraft, California (24 Radiographs)
D. Alger/J. Lindsay C. Graham	MURR/Nuclear Engineering	Autoradiography of Gold Plated Silicon Wafers for Uniformity of Gold Plating (8 radiographs)
D. Alger/J. Lindsay R. Brugger	MURR/Nuclear Engineering	Neutron Radiography of Boron Filter used on Beam Port F for Crack Detection (2 radiographs)
D. Alger/J. Lindsay P. Hall	MURR/Nuclear Engineering	Neutron Radiography of Oil Shale Samples for Crystal Formation (10 radiographs)
D. Alger/J. Lindsay W. Yelon	MURR/Nuclear Engineering	Evaluation of Two Ion Exchange Resins Developed by Dupont for use as a Neutron Detector Scintillator (6 radiographs)
D. Alger/J. Lindsay	MURR/Nuclear Engineering	Evaluation of Neutron Radiography as a Quality Control Technique for Rayovac Batteries (8 radiographs)
D. Alger/J. Lindsay	MURR/Nuclear Engineering	Evaluation of Several Neutron Absorbers and Phosphors for use as Real Time Neutron Radiography Scintillation Screens (63 radiographs)

MURR USE FOR NEUTRON ACTIVATION ANALYSIS -- JULY 1981 - JUNE 1982

IRRADIATIONS:

Pneumatic Tube: 12966 Irradiations, 19201 samples

In-Pool: 44 Irradiations, 1760 samples

PGNAA: 841 samples, standards and mixtures

ELEMENTS DETERMINED:

Na	Ti	As	Sn	Lu	Sm	Mg	V	Se	Sb	Eu	Hf
Al	Cr	Br	I	Ge	Ge	Si	Mn	Tb	Cs	Ta	Sc
S	Fe	Sr	Ba	Zn	Zn	Cl	Co	Ru	La	Th	Ca
K	Ni	Ag	Vb	U	Cu	B	Gd	Cd	N	H	

MATRICES ANALYZED:

Magnesium	Refined Sulfur	Uranium Ore	Clay
Brain	Coal	Gold Ore	Surgical Tools
Human Milk	Bones	Lead	Liver
Cow's Milk	Chert	Barium Sulfide	Rat Food
Infant Formula	Fescue	Quartz	Fly Ash
Obsidian	Horse Hair	Silicon	Dust
Dialysis Fluids	Human Hair	Blood Serum	Meteorites
Halogenated Organics	Paint	Whole Blood	Volcanic Ash
Feces	Glass	Air Filters	Urine
Catalysts	Fibers	Pottery	Well Water
Magnets	Gunshot Residue	Semen	Bulbourethral Glands
Testes	Caput Epididymis	Spermatazoa	Penis
Vas Deterens	Corpus Epididymis	Seminal Plasma	Pituitary
Vesicular Glands	Canda Epididymis	Prostate Gland	Muscle
Cerebellum	Cerebrum	Spinal Cord	Kidney Cortex
Heart	Liver	Kidney Medula	Lung
Pancreas	Spleen		

CO - 60 FACILITY RESEARCH & SERVICES -- JULY 1981 - JUNE 1982

<u>UNIVERSITY &amp; DEPARTMENT</u>	<u>FACULTY/MURR STAFF</u>	<u>STUDENTS</u>	<u>TITLE OR BRIEF DESCRIPTION OF RESEARCH</u>
Microbiology	A. Eisenstark/V. Spate		Cobalt-60 irradiations to split genetic materials
Pathology V.A. Hospital	J. Adelstein/V. Spate		Gamma dose comparison of cancerous brain tumors
UMC-Biochemistry	T.D. Luckey/V. Spate		Chronic irradiation of microorganisms to elicit radiogenic metabolism
UMC-Physics	D. Cowan/V. Spate	Hadil Yousif	$\gamma$ -Co-60 irradiation in $\text{Ln}_2$ of Ba S samples
UMC-Anthropology	R. Rowlett/V. Spate		Gamma Dosing for T.L.D. dating laboratory
UMR-Mechanical Engineering	H.P. Leighly/V. Spate		Gamma dose $\text{Fe}_2\text{Al}$ slugs for damage
UMMC-Medicine	H. Mullen/V. Spate		Gamma dose mice for baseline experiments
UMC-Chemistry	S. Mannahan/A. Duchemin	F. Laquer	Sterilization of rock samples in $\text{H}_2\text{O}$
Rockwell-Collins	L. Pinkston/V. Spate		Gamma damage studies
Stephens College	J. Hoerter/V. Spate		Sterilization of Fruit Flies
Columbia Public School	R. Hultsch/V. Spate		Irradiation of corn seeds for science project
Columbia Catholic School	S. Langhorst/V. Spate		Irradiation of seeds for science project

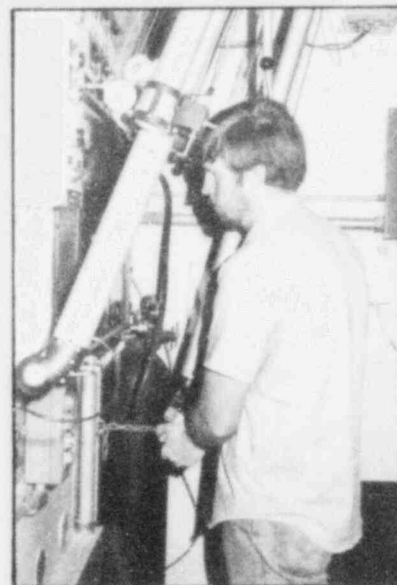




Staff Members use computer to keep track of the daily status of various experiments.



Technician placing sample cask in the Hot Cell.



# S E R V I C E S

## SERVICE

Provided by MURR — July 1981 - June 1982

- Provided service to 4 other universities within the State of Missouri and 44 outside of Missouri.
- Provided service to 26 state and federal agencies.
- Supported Mid-Missouri criminalistics by analysis of samples for 47 cases leading to court appearances for 18 cases.
- Supported 3 Missouri industries and 54 out-of-state industries.

OTHER EDUCATIONAL INSTITUTIONS SUPPORTED BY MURR -- JULY 1981 - JUNE 1982

ARIZONA STATE UNIVERSITY	NORTHWEST MISSOURI STATE UNIVERSITY	UNIVERSITY OF HOUSTON
BRIGHAM YOUNG UNIVERSITY	OREGON STATE UNIVERSITY	UNIVERSITY OF ILLINOIS
CALIFORNIA INSTITUTE OF TECHNOLOGY	POLITECHNICO, ITALY	UNIVERSITY OF KENTUCKY
CARNEGIE INSTITUTE	PORTLAND STATE	UNIVERSITY OF LOUISVILLE
HAHN-MEITNER INSTITUTE, WEST GERMANY	PURDUE UNIVERSITY	UNIVERSITY OF MICHIGAN
HARVARD UNIVERSITY	SALISBURY HIGH SCHOOL	UNIVERSITY OF NEW MEXICO
HEBREW UNIVERSITY, JERUSALEM	STANFORD UNIVERSITY	UNIVERSITY OF OKLAHOMA
IMPERIAL COLLEGE, LONDON	STEPHENS COLLEGE	UNIVERSITY OF PITTSBURGH
INDIANA UNIVERSITY	TENNESSEE STATE	UNIVERSITY OF REGINA, CANADA
INSTITUTO NACIONAL DE ANTROPOLOGIA E HISTORIA E HISTORIA, MEXICO	TEXAS A&M	UNIVERSITY OF TENNESSEE
IDAHO STATE UNIVERSITY	TEXAS TECH	UNIVERSITY OF TEXAS
KYOTO UNIVERSITY, JAPAN	TULANE UNIVERSITY	UNIVERSITY OF WISCONSIN
M.D. ANDERSON HOSPITAL	UNIVERSITY OF ARIZONA	URSULINE ACADEMY
MEMPHIS STATE UNIVERSITY	UNIVERSITY OF CALIFORNIA-LOS ANGELES	VIRGINIA POLYTECHNIC INSTITUTE
NEW YORK CITY UNIVERSITY	UNIVERSITY OF CHICAGO	WASHINGTON UNIVERSITY
NORTHEAST MISSOURI STATE UNIVERSITY	UNIVERSITY OF COLORADO	YALE UNIVERSITY

STATE AND FEDERAL AGENCIES SUPPORTED BY MURR -- JULY 1981 - JUNE 1982

ARGONNE NATIONAL LABORATORY  
ARMY RESEARCH OFFICE  
BROOKHAVEN NATIONAL LABORATORY  
CHICAGO METROPOLITAN SANITARY DISTRICT  
ENVIRONMENTAL PROTECTION AGENCY  
HARRY S. TRUMAN VETERANS HOSPITAL  
INTERNATIONAL ATOMIC ENERGY AGENCY  
LOS ALAMOS SCIENTIFIC LABORATORY  
MID-MISSOURI COUNCIL ON CRIMINAL JUSTICE  
MISSOURI DEPARTMENT OF PUBLIC SAFETY  
MISSOURI HIGHWAY PATROL  
MISSOURI STATE CANCER RESEARCH CENTER  
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

NATIONAL BUREAU OF STANDARDS  
NATIONAL INSTITUTES OF HEALTH  
NATIONAL SCIENCE FOUNDATION  
NAVAL RESEARCH LABORATORY  
OAK RIDGE NATIONAL LABORATORY  
ROCKWELL HANFORD  
U.S. AIR FORCE  
U.S. ARMY, ACADEMY OF HEALTH SCIENCES  
U.S. CORPS OF ENGINEERS  
U.S. DEPARTMENT OF AGRICULTURE  
U.S. DEPARTMENT OF ENERGY  
U.S. DEPARTMENT OF INTERIOR  
U.S. ENVIRONMENTAL PROTECTION AGENCY

MID-MISSOURI REGIONAL CRIMINALISTICS LABORATORY ACTIVITIES -- JULY 1981 - JUNE 1982

<u>EVIDENCE MATERIAL</u>	<u>NO. OF CASES</u>	<u>COURT APPEARANCES</u>
Gunshot Residue	30	5
Hair Comparison	8	4
Paint	4	1
Drug Analysis	4	8
Bullet Lead Analysis	1	0

Activation Analysis was used in the investigation and prosecution of 34 cases. All of these involved "Part I Crimes" which is the FBI's category for the most serious violent crimes against persons. These cases were:

Murder: 15 cases                      Forcible Rape: 8 cases                      Felonious Assault: 11 cases

It is significant to note that Activation Analysis is requested primarily for those crimes that the FBI has categorized as having the most devastating effects on its victims.

LAW ENFORCEMENT AGENCIES SERVED

Columbia Police Department	Boonville Police Department	West Plains Police Department
University of Missouri Police Department	Missouri Highway Patrol, Troop B	Missouri Highway Patrol Troop F
Boone County Sheriff's Department	Fayette Police Department	Sturgeon Police Department
Cole County Sheriff's Department	Fulton Police Department	Callaway County Sheriff's Department
Ashland Police Department	St. Louis County Police Department	Federal Bureau of Investigation
Cooper County Sheriff's Department	Richmond Police Department	Pettis County Sheriff's Department
Sedalia Police Department	Rolla Police Department	Jefferson City Police Department
Harris Police Department	St. Louis City Police Department	Howard County Sheriff's Department

INDUSTRIES SUPPORTED BY MURR -- JULY 1981 - JUNE 1982

ALPHA OMEGA SERVICES  
AMERICAN DENTAL ASSOCIATION  
AMERSHAM CORPORATION  
AUSTRALIAN AEC  
BELL LABORATORIES  
BETHLEHEM STEEL  
BLOCK DRUG CORPORATION  
BURROUGHS  
CATERPILLAR TRACTOR COMPANY  
CHEVRON RESEARCH CORPORATION  
CONOCO  
DOW CHEMICAL  
EG&G-SANTA BARBARA  
E.I. DU PONT  
ELECTRICAL POWER RESEARCH INSTITUTE  
ENERGY CONVERSION DEVICES  
EXXON  
FARLEY NUCLEAR PLANT  
GAMMA INDUSTRIES

GENERAL ELECTRIC  
GENERAL MOTORS  
HARRIS SEMICONDUCTOR  
HUGHES AIRCRAFT  
IBM  
ICN  
INTEL CORPORATION  
I.M. FUCHS  
ISOTOPE PRODUCTS  
J.T. BAKER COMPANY  
JOEL DJAHJAH  
KENNAMETAL, INC.  
KOMATSU ELECTRONIC METALS  
LEVER BROTHERS COMPANY  
MALLINCKRODT DIAGNOSTICS  
MAX GILLARD  
MCDONNELL-DOUGLAS  
MEDI-PHYSICS, INC.  
MISSOURI ANALYTICAL LABORATORIES

MOBIL OIL  
MONSANTO  
NEW ENGLAND NUCLEAR  
NUCLEPORE  
ORTEC  
PHILLIPS PETROLEUM  
PROCTOR & GAMBLE  
REED ROCK BIT CO.  
SCIENCE APPLICATIONS, INC.  
SHIN-ETSU ELECTRONICS  
SEMTECH CORPORATION  
SEQUOYAH NUCLEAR PLANT  
SILTEC  
TENNESSEE VALLEY AUTHORITY  
TOPSIL  
UNION CARBIDE  
VIRGINIA ELECTRIC POWER COMPANY  
WISCONSIN ELECTRIC  
WESTINGHOUSE ELECTRIC



Health Physics Manager and Staff perform routine sample analysis.



Health Physics staff member supervises the decontamination of a shipping cask.



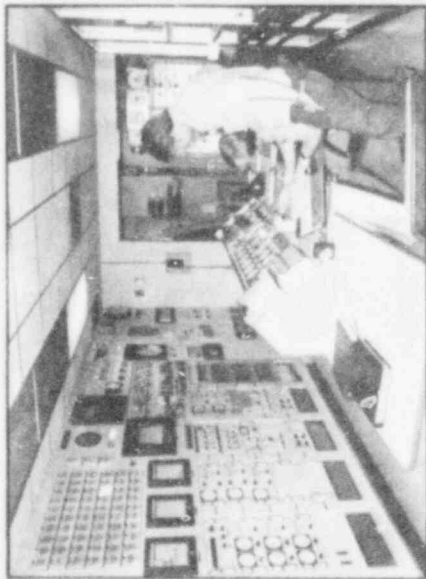
Health Physics personnel check a contaminated smear.



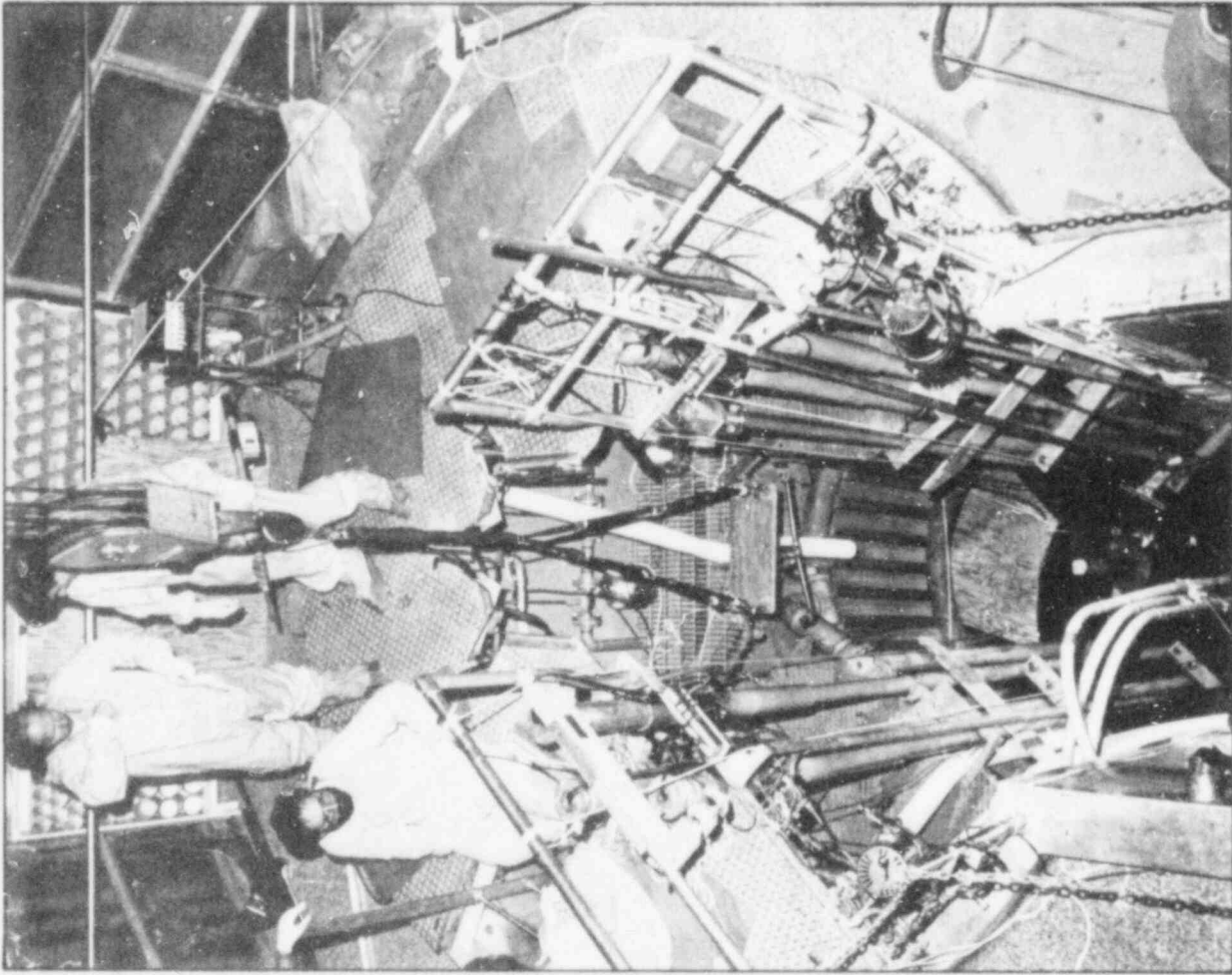
## SUMMARY OF HEALTH PHYSICS SUPPORT OF MURR JULY 1, 1981 - JUNE 30, 1982

- Met all Health Physics requirements for operation of reactor.
- Initiated a permanent record storage system for all Health Physics records.
- Initiated an automated Health Physics records system.
- Certified 160 shipments of MURR produced radioisotopes to University of Missouri experimenters.
- Certified 673 shipments of MURR produced radioisotopes to other Universities, government agencies and commercial firms.
- Provided full-time employment for three part-time students.
- Provided half-time employment for one full-time student.
- Health Physics personnel presented four papers at Health Physics Society Chapter meetings.
- Supported one graduate student who earned an M.S. degree studying neutron spectrometry.
- Radiation dosimetry provided for 194 persons not including visitors.

# OPERATIONS



Reactor Operators maintain detailed records.



Operations personnel replaced the Beryllium Reflector this year.

## REACTOR OPERATIONS\*

### SUMMARY — JULY 1981 - JUNE 1982

MURR operated 24 hours per day, 7 days per week (averaging more than 150 hours per week). The reactor was shut down at 2000 hours October 15 to replace the beryllium reflector; the reactor returned to normal operation at 0800 hours on October 24. There were no other major interruptions to the operating schedule and MURR operated at full power 89% of the hours in FY82.

	<u>FY 82</u>	<u>Total</u>
Total Hours Operated	7864	85,657
Total Hours at Full Power	7810	83,237
Total Integrated Power (MWD)	3261	28,783

There were 32 scheduled shutdowns for maintenance and 110 shutdowns for sample changes in the flux trap.

18 new fuel elements were received and 24 spent fuel elements were shipped.

\*For details see "Reactor Operations Annual Report 1981-1982".