

NRC FORM 313 U.S. NUCLEAR REGULATORY COMMISSION
 (4-2004)
 10 CFR 30, 32, 33,
 34, 35, 36, 39, and 40

APPLICATION FOR MATERIAL LICENSE

APPROVED BY OMB: NO. 3150-0120 **EXPIRES: 10/31/2005**
 Estimated burden per response to comply with this mandatory collection request: 7 hours. Submittal of the application is necessary to determine that the applicant is qualified and that adequate procedures exist to protect the public health and safety. Send comments regarding burden estimate to the Records and FOIA/Privacy Services Branch (T-5 F52), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0120), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

INSTRUCTIONS: SEE THE APPROPRIATE LICENSE APPLICATION GUIDE FOR DETAILED INSTRUCTIONS FOR COMPLETING APPLICATION. SEND TWO COPIES OF THE ENTIRE COMPLETED APPLICATION TO THE NRC OFFICE SPECIFIED BELOW.

APPLICATION FOR DISTRIBUTION OF EXEMPT PRODUCTS FILE APPLICATIONS WITH:

DIVISION OF INDUSTRIAL AND MEDICAL NUCLEAR SAFETY
 OFFICE OF NUCLEAR MATERIALS SAFETY AND SAFEGUARDS
 U.S. NUCLEAR REGULATORY COMMISSION
 WASHINGTON, DC 20555-0001

ALL OTHER PERSONS FILE APPLICATIONS AS FOLLOWS:

IF YOU ARE LOCATED IN:

ALABAMA, CONNECTICUT, DELAWARE, DISTRICT OF COLUMBIA, FLORIDA, GEORGIA, KENTUCKY, MAINE, MARYLAND, MASSACHUSETTS, MISSISSIPPI, NEW HAMPSHIRE, NEW JERSEY, NEW YORK, NORTH CAROLINA, PENNSYLVANIA, PUERTO RICO, RHODE ISLAND, SOUTH CAROLINA, TENNESSEE, VERMONT, VIRGINIA, VIRGIN ISLANDS, OR WEST VIRGINIA, SEND APPLICATIONS TO:

LICENSING ASSISTANCE TEAM
 DIVISION OF NUCLEAR MATERIALS SAFETY
 U.S. NUCLEAR REGULATORY COMMISSION, REGION I
 475 ALLENDALE ROAD
 KING OF PRUSSIA, PA 19406-1415

IF YOU ARE LOCATED IN:

ILLINOIS, INDIANA, IOWA, MICHIGAN, MINNESOTA, MISSOURI, OHIO, OR WISCONSIN, SEND APPLICATIONS TO:

MATERIALS LICENSING BRANCH
 U.S. NUCLEAR REGULATORY COMMISSION, REGION III
 2443 WARRENVILLE ROAD, SUITE 210
 LISLE, IL 60532-4352

ALASKA, ARIZONA, ARKANSAS, CALIFORNIA, COLORADO, HAWAII, IDAHO, KANSAS, LOUISIANA, MONTANA, NEBRASKA, NEVADA, NEW MEXICO, NORTH DAKOTA, OKLAHOMA, OREGON, PACIFIC TRUST TERRITORIES, SOUTH DAKOTA, TEXAS, UTAH, WASHINGTON, OR WYOMING, SEND APPLICATIONS TO:

NUCLEAR MATERIALS LICENSING BRANCH
 U.S. NUCLEAR REGULATORY COMMISSION, REGION IV
 611 RYAN PLAZA DRIVE, SUITE 400
 ARLINGTON, TX 76011-4005

PERSONS LOCATED IN AGREEMENT STATES SEND APPLICATIONS TO THE U.S. NUCLEAR REGULATORY COMMISSION ONLY IF THEY WISH TO POSSESS AND USE LICENSED MATERIAL IN STATES SUBJECT TO U.S. NUCLEAR REGULATORY COMMISSION JURISDICTIONS.

1. THIS IS AN APPLICATION FOR (Check appropriate item)

A. NEW LICENSE

B. AMENDMENT TO LICENSE NUMBER 37-06864-06

C. RENEWAL OF LICENSE NUMBER _____

2. NAME AND MAILING ADDRESS OF APPLICANT (Include ZIP code)

Pennsylvania Hospital
 800 Spruce Street
 Philadelphia, PA 19107

3. ADDRESS WHERE LICENSED MATERIAL WILL BE USED OR POSSESSED

Pennsylvania Hospital
 800 Spruce Street
 Philadelphia, PA 19107

4. NAME OF PERSON TO BE CONTACTED ABOUT THIS APPLICATION

Leonard Shabason PhD

TELEPHONE NUMBER

(215) 829-3865

SUBMIT ITEMS 5 THROUGH 11 ON 8-1/2 X 11" PAPER. THE TYPE AND SCOPE OF INFORMATION TO BE PROVIDED IS DESCRIBED IN THE LICENSE APPLICATION GUIDE.

5. RADIOACTIVE MATERIAL
 a. Element and mass number; b. chemical and/or physical form; and c. maximum amount which will be possessed at any one time.

7. INDIVIDUAL(S) RESPONSIBLE FOR RADIATION SAFETY PROGRAM AND THEIR TRAINING EXPERIENCE.

9. FACILITIES AND EQUIPMENT.

11. WASTE MANAGEMENT.

6. PURPOSE(S) FOR WHICH LICENSED MATERIAL WILL BE USED.

8. TRAINING FOR INDIVIDUALS WORKING IN OR FREQUENTING RESTRICTED AREAS.

10. RADIATION SAFETY PROGRAM.

12. LICENSE FEES (See 10 CFR 170 and Section 170.31)

FEE CATEGORY	AMOUNT ENCLOSED	\$
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13. CERTIFICATION. (Must be completed by applicant) THE APPLICANT UNDERSTANDS THAT ALL STATEMENTS AND REPRESENTATIONS MADE IN THIS APPLICATION ARE BINDING UPON THE APPLICANT.

THE APPLICANT AND ANY OFFICIAL EXECUTING THIS CERTIFICATION ON BEHALF OF THE APPLICANT, NAMED IN ITEM 2, CERTIFY THAT THIS APPLICATION IS PREPARED IN CONFORMITY WITH TITLE 10, CODE OF FEDERAL REGULATIONS, PARTS 30, 32, 33, 34, 35, 36, 39, AND 40, AND THAT ALL INFORMATION CONTAINED HEREIN IS TRUE AND CORRECT TO THE BEST OF THEIR KNOWLEDGE AND BELIEF.

WARNING: 18 U.S.C. SECTION 1001 ACT OF JUNE 25, 1948 62 STAT. 749 MAKES IT A CRIMINAL OFFENSE TO MAKE A WILLFULLY FALSE STATEMENT OR REPRESENTATION TO ANY DEPARTMENT OR AGENCY OF THE UNITED STATES AS TO ANY MATTER WITHIN ITS JURISDICTION.

CERTIFYING OFFICER - TYPED/PRINTED NAME AND TITLE: RONALD KUMOR Vice President Operations

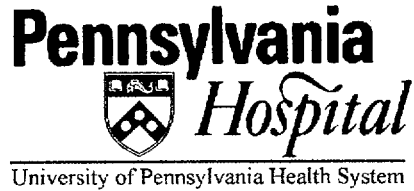
SIGNATURE: [Signature]

DATE: 2-28-06

FOR NRC USE ONLY

TYPE OF FEE	FEE LOG	FEE CATEGORY	AMOUNT RECEIVED	CHECK NUMBER	COMMENTS
			\$		
APPROVED BY				DATE	

RECEIVED
 REGION I
 MAR - 6 PM 1:50



February 24, 2006

Leonard Shabason, Ph.D.
Radiation Safety Officer
Pennsylvania Hospital
Radiation Oncology
800 Spruce Street
Philadelphia, PA 19107

Sandra Gabriel, Ph.D.
Senior Health Physicist
Medical Branch
Division of Nuclear Safety
U. S. Nuclear Regulatory Commission
Region I
475 Allendale Road
King of Prussia, PA 19406

RE: Amendment Request to License Number 37-06864-06

Dear Dr. Gabriel:

This letter is to request that our radioactive material license be amended to add Xunnqing (Jennifer) Zhu, M.S. as an authorized medical physicist for gamma knife procedures.

Ms. Zhu has had prior medical physics experience at both the Fox Chase cancer Center in Philadelphia, PA and at St. Jude's Medical Center in Memphis, TN. Letters from medical physicists who supervised Ms. Zhu at that time are attached. Ms. Zhu has been working as a medical physicist at Pennsylvania Hospital since September 2006 under the supervision of Leonard Shabason, Ph.D.


Ms. Zhu has attended the approved Gamma Knife course offered at the University of Pittsburgh on January 9-15, 2006. We have enclosed a copy of the certificate from the training course as well as Ms. Zhu's curriculum vitae.

Ms. Zhu has been involved with the Gamma Knife at Pennsylvania Hospital from the time the unit was delivered. Ms. Zhu assisted with the environmental radiation safety survey around the unit, the initial calibration, daily checks, monthly checks, routine treatment planning and interaction with Elekta service personnel.

We request that if you decide that Ms. Zhu does need more current experience in medical physics that you advise use what additional experience would be required to fulfill the Commission's requirements.

I may be reached by phone at (215) 829-3865 or by e-mail at shabasol@pahosp.com.

Sincerely yours,

A handwritten signature in black ink, appearing to read "Leonard Shabason". The signature is fluid and cursive, with a long horizontal stroke at the end.

Leonard Shabason, Ph.D.
Radiation Safety Officer

Xunqing (Jennifer) Zhu

Cell Phone [REDACTED]

E-mail: Jennifer.Zhu@uphs.upenn.edu

QUALIFICATION SUMMARY

- * Clinical Physics working experience with Pennsylvania Hospital of U. Penn. System.
- * Dosimetry and treatment planning services. Operates therapeutic radiation producing equipment and radiation therapy planning system.
- * Trained in medical radiation physics in top cancer institution, Fox Chase Cancer Center.
- * Experienced on AQsim, AQplan, Syngo, CORVUS, ADAC Pinnacle, IMRT planning, IMRT QA, weekly chart checks utilizing IMPAC Multi-Access R&V system, initial chart checks, monthly and annual machine calibration and QA.
- * Experienced in working on all makers of linear accelerators including Varian, Siemens and Elekta.
- * Attended trainings on Monte Carlo, IMRT treatment planning and Gamma Knife principle and practice
- * Knowledge of physics, radiation therapy, oncology and anatomy.
- * Two years experience on dosimetry study with paper published.
- * Solid education background with master's degree in applied science.
- * Over ten years working experience in health care with demonstrated computer experience and knowledge of working in a health care institute.

EDUCATION

1994 to 1996

M. A. Sc. - Process Identification and Control

University of Toronto, Toronto, Canada

Thesis: *Process Identification (Mathematical modeling)*

1985 to 1989

B. Sc. - Precision Instrument Engineering

University of Tianjin, Tianjin, PRC

Thesis: *The development of data processing software for model 03 permanent magnetic spectrometer*

WORK EXPERIENCE

Sept. 2005 to present

Medical Physicist

Pennsylvania Hospital, Radiation Oncology

- Worked on ADAC Pinnacle treatment planning system
- Performed IMRT QA, weekly and initial chart checks
- Performed monthly machine QA and annual machine QA on Siemens Oncor and Varian 2100
- Performed Gamma Knife treatment planning and system QA

Dec. 2004 to Sept. 2005 **Assistant Physicist**

Fox Chase Cancer Center, Radiation Oncology

- Worked on AQsim, AQplan, Syngo, CORVUS IMRT planning
- Performed IMRT QA, weekly and initial chart checks
- Performed monthly machine QA and annual machine QA.
- Did research on prostate motion using MR images
- Did research on the potential of MR image based treatment planning
- Contoured rectum on CTs and did research on observing rectum changes during treatment course

**PERSONAL INFORMATION WAS REMOVED
BY NRC. NO COPY OF THIS INFORMATION
WAS RETAINED BY THE NRC.**

- 2001 to 2004 **Sr. Software Developer**
St. Jude Children's Research Hospital, Information Tech. Services
- Made a few web based software systems, such as Clinical Privilege Look-up, Full-text journal look up, Performance Manage System and Security Visitor web application
 - Supported web applications
 - Supported end user on regular basis
- 1997 to 2001 **Web Technology Specialist**
St. Jude Children's Research Hospital, Information Tech. Services
- Designed and developed a few web sites, such as award winning Brain Tumor internet web site
 - Did web server administration, maintained and supported web applications
 - Developed Radioactive Decay Calculator intranet web site
- 1996 to 1997 **Research Associate**
St. Jude Children's Research Hospital, Radiation Oncology
- Clinical dosimetry research
- 1994 to 1996 **Research Assistant**
University of Toronto, Group of Process Control
- Studied on statistical modeling and system identification
 - Developed extensive computer code for the purpose of computation and simulations
- Teaching Assistant**
"Process dynamics and control" for 3rd year undergraduate students
- Process dynamics and control
- 1993 to 1994 **Research Associate**
Ontario Cancer Institute/Princess Margaret Hospital, Dept. of Clinical Physics
- Did research on portal image dosimetry
- 1989 to 1993 **Engineer**
Department of Environmental Protection, Tianjin, PRC
- Worked on a computer controlled water quality monitoring system

PROFESSIONAL TRAINING

Gamma Knife Principle and Practice (2006)
Radiation Biology course (scored A) (2006)
Monte Carlo (2005)
IMRT treatment planning (2005)
Lecture series given by PhD medical physicists

HONORS & AWARDS:

- * Harold E. Johns Scholarship in Medical Physics, 1993
University of Toronto, Dept. of Medical Biophysics
- * VOX Gold Award on Brain Tumor Internet web site
- * SEE (Significantly exceed expectation) in annual performance evaluation

PUBLICATIONS

"Portal dosimetry using a liquid ion chamber matrix: Dose response studies" by Yunping Zhu, Xunqing Jiang, and Jake Van Dyk *Med. Phys.* 22(7), July 1995, pp. 1101-1106



**FOX CHASE
CANCER CENTER**

*Lili Chen, Ph.D.
Associate Member, Radiation Physics
Department of Radiation Oncology
Fox Chase Cancer Center
Philadelphia, PA 19111
Tel: (215) 728-3003
Fax: (215) 728-4789
Email: lili.chen@fccc.edu*

Jan 30, 2006

To Whom It May Concern:

Ms. Xunqing (Jennifer) Zhu

I am delighted to write a reference letter for Ms. Xunqing (Jennifer) Zhu. As shown in her CV, Jennifer has a Master's degree in Science with previous radiation physics training and research experience in Princess Margaret Hospital, Toronto and St. Jude Children's Hospital, Memphis. She joined our group in Dec 2004 and worked as an assistant physicist under my supervision until Sept 2005.

Jennifer worked with me on several clinical and research projects during the 10 months at Fox Chase Cancer Center. One of the projects was to investigate the effect of rectal fillings on the prostate and rectal dose distributions for hypo-fractionated prostate IMRT, which required contouring treatment target and critical structures on multiple CTs taken during the whole treatment course and re-calculate the IMRT dose distributions based on the measured setup uncertainties and variable patient anatomy.

As an assistant physicist, Jennifer also involved in clinical activities. She performed independent weekly patient chart review and patient-specific IMRT plan QA (ion chamber measurement). She participated in the monthly and annual machine QA, initial plan review and IMRT treatment planning for prostate patients under physicists' supervision. Jennifer is intelligent, hard working, efficient and reliable. She is well-liked by everyone in our group.

If you have any questions, please feel free to contact me.

Sincerely yours,

Lili Chen, Ph.D.

THIS IS A TRUE COPY
OF ORIGINAL DOCUMENT

BETTY R. WILLIAMS
Notary Public of New Jersey
My Commission Expires 12/06/06
A A A

To Whom It May Concern:

This is to certify that Xunqing Jiang Zhu, M.S. started her employment with the Department of Radiation Oncology at St. Jude Children's Research Hospital as of Dec. 1996 till Nov. 1997. She was working as a Research Associate under the direct supervision of ABR certified radiation physicists. Her work involves clinical physics training plus clinical research. She had opportunity to operate different therapeutic radiation equipments and radiation treatment planning systems. She also had a Masters Degree in Applied Sciences which could help her not only for the current work of therapeutic physics but also for possibly new techniques to be implemented in your site. Her strong computers and computational (programming) experience will be a good addition to the work of medical physicists. She has strong interpersonal and communication skills, which is important for a clinical physicist. She is also energetic and a quicker learner of any new techniques.

If you have any questions, please contact me. Thanks.

Sincerely yours,

Huaiqun (Harrison) Guan, PhD, Diplomat of ABR



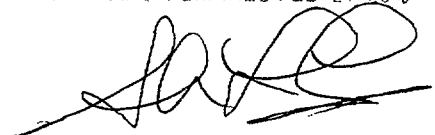
Sr. Staff Physicist

**Department of Radiation Oncology
Henry Ford Health System
Detroit, MI 48202**

Phone: 313-916-8786

True Copy of Original

SHARON L. FURTH
NOTARY PUBLIC OF NEW JERSEY
MY COMMISSION EXPIRES FEB 21 2010



University of Pittsburgh

Center for Image-Guided Neurosurgery

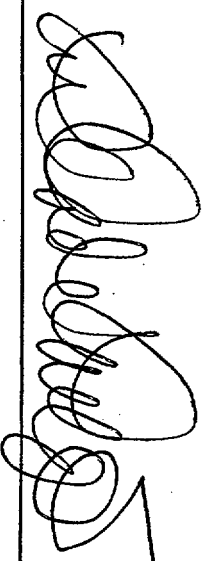
This is to Certify That

Xunqing Zhu, M.S.

Attended

Principles and Practice of Gamma Knife® Radiosurgery

from January 9-13, 2006



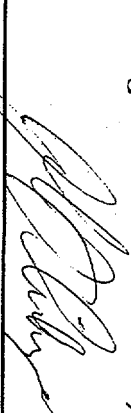
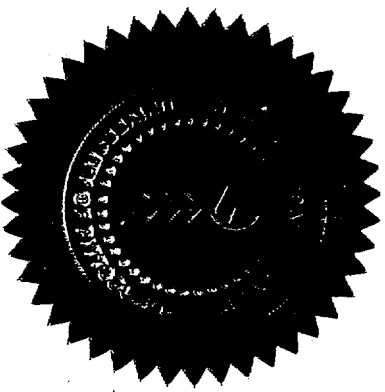
L. Dade Lunsford, M.D., FACS



Douglas Kendziolka M.D., M.Sc., FRCSC(C)



Ann H. Maitz, M.Sc.



John C. Flickinger, M.D.



This is to acknowledge the receipt of your letter/application dated

2/28/2006, and to inform you that the initial processing which includes an administrative review has been performed.

Approved, 37-06864-06
There were no administrative omissions. Your application was assigned to a technical reviewer. Please note that the technical review may identify additional omissions or require additional information.

Please provide to this office within 30 days of your receipt of this card

A copy of your action has been forwarded to our License Fee & Accounts Receivable Branch, who will contact you separately if there is a fee issue involved.

Your action has been assigned **Mail Control Number** 138532.
When calling to inquire about this action, please refer to this control number.
You may call us on (610) 337-5398, or 337-5260.