



actinide series	The series of elements beginning with actinium, Ele- ment No. 89, and continuing through lawrencium, Ele- ment No. 103, which together occupy one position in the <i>Periodic Table</i> . The series includes uranium, Element No. 92, and all the man-made transuranic elements. The group is also referred to as the "Ac-
	tinides". (Compare lanthanide series, transuranic elements.) (See Appendix.)

actinium series (sequence) The series of nuclides resulting from the radioactive decay of uranium-235. Many man-made nuclides decay into this sequence. The end product of this sequence in nature is lead-207. (See decay, radioactive; radioactive series.) (See Appendix.)

activation The process of making a material radioactive by bombardment with neutrons, protons, or other nuclear particles. Also called *vadioactivation*. (See activation analysis, induced radioactivity.)

activation analysis

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A method for identifying and measuring chemical elements in a sample of material. The sample is first made radioactive by bombardment with neutrons, charged particles, or gamma rays. The newly formed radioactive atoms in the sample then give off characteristic nuclear *radiations* (such as gamma rays) that tell what kinds of atoms are present and how many. Activation analysis is usually more sensitive than chemical analysis. It is used in research, industry, archeology, and criminology.

radioactivity. (See specific activity.) activity The U. S. Atomic Energy Commission. AEC The cooling of a reactor after it has been shut down. aftercooling The heat produced by the continuing decay of radioafterheat active atoms in a reactor after fission has stopped. Most of the afterheat is due to the radioactive decay of fission products. The collection and analysis of samples of air to meaair sampling sure its radioactivity or to detect the presence of radioactive substances. (See fallout.) A form of an element differing in isotopic composiallobar tion, having a different average atomic weight from the usually occurring form. (See isotope.)

	neutron	[Symbol n] An uncharged elementary particle with a
		mass slightly greater than that of the proton, and found in the nucleus of every atom heavier than hy-
		drogen. A free neutron is unstable and decays with a half-life of about 13 minutes into an electron, pro-
		ton, and neutrino. Neutrons sustain the fission chain
		termediate neutron, and thermal neutron.)
	neutron activation	Activation analysis in which neutrons are the acti-
	analysis	vating agent.
	neutron capture	The process in which an atomic <i>mucleus</i> absorbs or captures a neutron. The probability that a given ma- terial will capture neutrons is measured by its neu- tron capture <i>cross section</i> , which depends on the en- ergy of the neutrons and on the nature of the material.
	김 영화 김 승규는	(See capture, nuclear reaction, radiative capture.)
	neutron density	The number of neutrons per cubic centimeter in the
		core of a reactor. (See <i>flux</i> .)
	neutron economy	The degree to which neutrons in a reactor are used
		for desired ends instead of being lost by leakage or nonproductive absorption. The ends may include
		propagation of the chain reaction, converting fertile
		to fissionable material, producing isotopes, or re- search. (See <i>leakage</i> , <i>reactivity</i> .)
	neutron flux	(See flux.)
	nondestructive	Testing to detect internal and concealed defects in
	testing	materials using techniques that do not damage or destroy the items being tested. X rays, isotopic ra- diation and ultrasonics are frequently used.
	normal uranium	natural uranium.
	nuclear battery	A radioisotopic generator.
	nuclear energy	The energy liberated by a nuclear reaction (fission or fusion) or by radioactive decay. (See decay, radio- active; fission; fusion; nuclear explosive; nuclear re-
		actor.)
	nuclear explosive	An explosive based on fission or fusion of atomic nuclei. (See device, nuclear; nuclear weapons.)
n,	nuclear fission	(See fission.)
4	nuclear fusion	(See fusion.)
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