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**DICTIONARY OF  
SCIENTIFIC AND  
TECHNICAL  
TERMS**

**Fifth Edition**

On the cover: Photomicrograph of crystals of vitamin B<sub>1</sub>.  
(Dennis Kunkel, University of Hawaii)

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of thorium which has mass number 228. Symbolized RdTh. [ 'rād-ē-ō 'thōr-ē-ōm ]

**radio time signal** [COMMUN] A time signal sent by radio broadcast. [ 'rād-ē-ō 'tīm ,sīgn-əl ]

**radio tower** [COMMUN] A tower, usually several hundred meters tall, either guyed or freestanding, on which a transmitting antenna is mounted to increase the range of radio transmission; in some cases, the tower itself may be the antenna. [ 'rād-ē-ō ,tā-ŭ-ŕ ]

**radiotracer** See radioactive tracer. [ 'rād-ē-ō 'trā-sŕ ]

**radio tracking** [ENG] The process of keeping a radio or radar beam set on a target and determining the range of the target continuously. [ 'rād-ē-ō 'trak-ŭŋ ]

**radio transmission** [COMMUN] The transmission of signals through space at radio frequencies by means of radiated electromagnetic waves. [ 'rād-ē-ō 'tranz-'mish-ən ]

**radio transmitter** [ELECTR] The equipment used for generating and amplifying a radio-frequency carrier signal, modulating the carrier signal with intelligence, and feeding the modulated carrier to an antenna for radiation into space as electromagnetic waves. Also known as radio set; transmitter. [ 'rād-ē-ō 'tranz,mīd-ŕ ]

**radio transponder** [ELECTR] A transponder which receives and transmits radio waves, in contrast to a sonar transponder, which receives and transmits acoustic waves. [ 'rād-ē-ō 'tran-'spān-dŕ ]

**radio tube** See electron tube. [ 'rād-ē-ō ,tūb ]

**radio watch** See watch. [ 'rād-ē-ō ,wāč ]

**radio wave** [ELECTROMAG] An electromagnetic wave produced by reversal of current in a conductor at a frequency in the range from about 10 kilohertz to about 300,000 megahertz. [ 'rād-ē-ō ,wāv ]

**radio wavefront distortion** [ELECTROMAG] Change in the direction of advance of a radio wave. [ 'rād-ē-ō 'wāv,frānt dī,stŕ-shən ]

**radio-wave propagation** [ELECTROMAG] The transfer of energy through space by electromagnetic radiation at radio frequencies. [ 'rād-ē-ō 'wāv,prāp-ŕ-ŕ-ŕ-shən ]

**radio window** [GEOPHYS] A band of frequencies extending from about 6 to 30,000 megahertz, in which radiation from the outer universe can enter and travel through the atmosphere of the earth. [ 'rād-ē-ō ,wīn-dŕ ]

**radish** [BOT] *Raphanus sativus*. 1. An annual or biennial crucifer belonging to the order Capparales. 2. The edible, thickened hypocotyl of the plant. [ 'rād-īsh ]

**radist** [NAV] Radio-navigation system in which the comparison of arrival times of transmitted pulses, at three or more ground stations, indicates the position of the vehicle. [ 'rā,dīst ]

**radium** [CHEM] 1. A radioactive member of group II, symbol Ra, atomic number 88; the most abundant naturally occurring isotope has mass number 226 and a half-life of 1620 years. 2. A highly toxic solid that forms water-soluble compounds; decays by emission of  $\alpha$ ,  $\beta$ , and  $\gamma$ -radiation; melts at 700°C, boils at 1140°C; turns black in air; used in medicine, in industrial radiography, and as a source of neutrons and radon. [ 'rād-ē-ōm ]

**radium age** [NUCLEO] The age of a mineral as calculated from the numbers of radium atoms present originally, now, and when equilibrium is established with ionium. [ 'rād-ē-ōm ,āj ]

**radium bromide** [INORG CHEM]  $\text{RaBr}_2$  Water-soluble, poisonous, radioactive white powder, corrosive to skin or flesh; melts at 728°C; used in medicine, physical research, and luminous paint. [ 'rād-ē-ōm 'brŕ,mīd ]

**radium carbonate** [INORG CHEM]  $\text{RaCO}_3$  Water-insoluble, poisonous, radioactive, white powder; used in medicine. [ 'rād-ē-ōm 'kār-bŕ,nāt ]

**radium cell** [NUCLEO] A sealed thin-wall tube containing radium. [ 'rād-ē-ōm ,sel ]

**radium chloride** [INORG CHEM]  $\text{RaCl}_2$  Water- and alcohol-soluble, poisonous, radioactive, yellow-white crystals; corrosive effect on skin and flesh; melts at 1000°C; used in medicine, physical research, and luminous paint. [ 'rād-ē-ōm 'klŕ,īd ]

**radium F** See polonium-210. [ 'rād-ē-ōm 'ef ]

**radium needle** [NUCLEO] A radium cell in the form of a needle, usually of platinum-iridium or gold alloy, designed primarily for insertion in tissue. [ 'rād-ē-ōm ,nēd-ŕ ]

**radium plaque** [NUCLEO] A radium container in which the radium is distributed over a surface; the shielding is usually

small in one direction so as to permit transmission of  $\beta$ -rays as well as  $\gamma$ -rays. [ 'rād-ē-ōm ,plak ]

**radium sulfate** [INORG CHEM]  $\text{RaSO}_4$  Water-insoluble, radioactive, poisonous, white crystals; used in medicine. [ 'rād-ē-ōm 'sŕl,fāt ]

**radium therapy** [MED] Radiotherapy using the radiations from radium. [ 'rād-ē-ōm ,ther-ŕ-pē ]

**radius** [ANAT] The outer of the two bones of the human forearm or of the corresponding part in vertebrates other than fish. [MATH] 1. A line segment joining the center and a point of a circle or sphere. 2. The length of such a line segment. [ 'rād-ē-ŕs ]

**radius cutter** [MECH ENG] A formed milling cutter with teeth ground to produce a radius on the workpiece. [ 'rād-ē-ŕs 'kŕd-ŕ ]

**radius of action** [ENG] The maximum distance a ship, aircraft, or other vehicle can travel away from its base along a given course with normal load and return without refueling, but including the fuel required to perform those maneuvers made necessary by all safety and operating factors. [ 'rād-ē-ŕs ōv 'āk-shŕn ]

**radius of convergence** [MATH] The positive real number corresponding to a power series expansion about some number  $a$  with the property that if  $x - a$  has absolute value less than this number the power series converges at  $x$ , and if  $x - a$  has absolute value greater than this number the power series diverges at  $x$ . [ 'rād-ē-ŕs ōv kŕn'vŕrjŕns ]

**radius of curvature** [MATH] The radius of the circle of curvature at a point of a curve. [ 'rād-ē-ŕs ōv 'kŕv-ŕ-ŕ-ŕ ]

**radius of damage** [ORD] The distance from ground zero of a nuclear blast at which there is a 0.50 probability of achieving the desired damage. [ 'rād-ē-ŕs ōv 'dam-ij ]

**radius of geodesic curvature** [MATH] For a point on a curve lying on a surface, the reciprocal of the geodesic curvature at the point. [ 'rād-ē-ŕs ōv jŕ-ŕ-ŕ,des'īk 'kŕv-ŕ-ŕ-ŕ ]

**radius of geodesic torsion** [MATH] The reciprocal of the geodesic torsion of a surface at a point in a given direction. [ 'rād-ē-ŕs ōv jŕ-ŕ-ŕ,des'īk 'tŕr-shŕn ]

**radius of gyration** [MATH] The square root of the ratio of the moment of inertia of a plane figure about a given axis to its area. [MECH] The square root of the ratio of the moment of inertia of a body about a given axis to its mass. [ 'rād-ē-ŕs ōv jŕ-shŕn ]

**radius of normal curvature** [MATH] The reciprocal of the normal curvature of a surface at a point and in a given direction. [ 'rād-ē-ŕs ōv 'nŕr'mŕl 'kŕv-ŕ-ŕ-ŕ ]

**radius of protection** [ENG] The radius of the circle within which a lightning discharge will not strike, due to the presence of an elevated lightning rod at the center. [ 'rād-ē-ŕs ōv prŕ'tek-shŕn ]

**radius of rupture** [ORD] Greatest distance from the center of an underground explosive charge at which the explosion will be destructive. [ 'rād-ē-ŕs ōv 'rŕp-ŕ-ŕ-ŕ ]

**radius of safety** [ORD] The horizontal distance from ground area beyond which the weapon effects on friendly troops are acceptable. [ 'rād-ē-ŕs ōv 'sŕf-ŕ-ŕ ]

**radius of torsion** [MATH] The reciprocal of the torsion of a space curve at a point. [ 'rād-ē-ŕs ōv 'tŕr-shŕn ]

**radius of total curvature** [MATH] The quantity  $\sqrt{-1/\rho}$ , where  $C$  is the total curvature of a surface at a point. [ 'rād-ē-ŕs ōv 'tŕd-ŕl 'kŕv-ŕ-ŕ-ŕ ]

**radius of visibility** [NAV] The radius of a circle limiting the area in which an objective can be seen under specified conditions. [ 'rād-ē-ŕs ōv ,vīz-ŕ'bīl-ŕd-ŕ ]

**radius ratio** [PHYS CHEM] The ratio of the radius of a cation to the radius of an ion; relative ionic radii are pertinent to crystal lattice structure, particularly the determination of coordination number. [ 'rād-ē-ŕs ,rŕshŕ ]

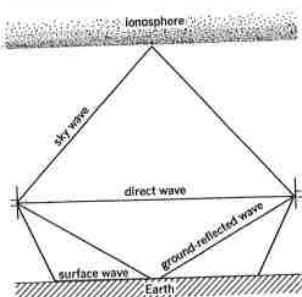
**radius rod** [ENG] A rod which restricts movement of a part to a given arc. [ 'rād-ē-ŕs ,rŕd ]

**radius vector** [ASTRON] A line joining the center of an orbiting body with the focus of its orbit located near its primary. [MATH] The coordinate  $r$  in a polar coordinate system, which gives the distance of a point from the origin. [ 'rād-ē-ŕs ,vŕk-tŕ ]

**radix** See base of a number system; root. [ 'rād-īks ]

**radix approximation** [MATH] The approximation of a number by a number that can be expressed by a specified finite

#### RADIO-WAVE PROPAGATION



Possible transmission paths of electromagnetic radiation at radio frequencies.