pointed out the fundamental advantage of a four-level system, such as the neodymium glass laser, and compared it with the three-level system, such as the ruby laser. His major point was that in the former case it is necessary only to have a small fraction of the ions in an excited state, while in the 3-level system at least half the ions must be in the excited state. Snitzer's research with neodymium glass lasers has led him to postulate that the neodymium site in silicate glass is typically a slightly distorted icosohedron. This argument is favored because the interstice in an icosohedron formed with oxygen ions is very nearly the appropriate size for a neodymium ion. In addition, icosohedra are formed from triangular sides, and triangles of oxygen are available from sides of the silica tetrehedra that are the primary structural unit of silicate glass. Icosohedral symmetry is not found in simple crystalline materials because of the inability of icosohedra to fill space. However, in the case of glass or liquids this limitation is overcome by the amorphous structure of the material adjacent to icosohedra. Furthermore, the postulated diagram for the energy level of neodymium in silicate glasses shows splitting of the ground state into two states, similar to that obtained with icosohedral symmetry. Other possible structural arrangements would require a different degree of ground state splitting. Snitzer has been able to use the principle of icosohedral coordination of the neodymium ion as a guide in the development of optimum glass compositions as hosts for the neodymium ion.


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## Forthcoming Events

**February**

*2–5.* American Inst. of **Chemical Engineers**, annual, Boston, Mass. (J. Henry, AICE, 345 E. 47 St., New York, N.Y.)

*2–7.* Institute of **Electrical and Electronics Engineers**, winter meeting, New York, N.Y. (A. P. Fughill, Detroit Edison Co., 2000 Second Ave., Detroit, Mich. 48226)

*2–8.* **Teratology**, workshop, Commission on Drug Safety, Gainesville, Fla. (D. C. Trexler, Commission on Drug Safety, 221 N. LaSalle St., Chicago, Ill. 60601)

*2–11.* Scientific-Technical **Documenta-**

**tion and Information,** intern. congr., Rome, Italy. (I. M. Lombardo, La Produttivita, Viale Regina Margherita, 84d, Rome)

*3–4.* Society of **Rheology,** Claremont, Calif. (T. L. Smith, Stanford Research Inst., Menlo Park, Calif.)

*3–4.* Perspectives in **Virology** IV, Gustav Stern symp., New York, N.Y. (M. Pollard, Lobund Laboratory, Univ. of Notre Dame, Notre Dame, Ind.)

*3–7.* **Materials,** intern. conf., Philadelphia, Pa. (A. G. H. Dietz, Dept. of Building Engineering, Massachusetts Inst. of Technology, Cambridge)

*4–6.* Society of the **Plastics** Industry, conf. of the reinforced plastics div., Chicago, Ill. (W. C. Bird, SPI, 250 Park Ave., New York, N.Y. 10017)

*4–6.* Cellular Biology of **Myxovirus Infections,** CIBA Foundation symp., London, England. (CIBA Foundation, 41 Portland Pl., London, W.1)

*5–7.* **Military Electronics,** 1964 winter conv., Los Angeles, Calif. (Inst. of Electrical and Electronics Engineers, Box A, Lenox Hill Station, New York, N.Y. 10021)

*5–8.* American College of **Radiology,** natl. meeting, Tucson, Ariz. (American College of Radiology, 20 N. Wacker Dr., Chicago, Ill. 60606)

*7–8.* **Differentiation and Development,** symp., New York, N.Y. (New York Heart Assoc., 10 Columbus Circle, New York, N.Y. 10019)

*9–11.* **Entomological** Soc. of America, Southwestern Branch, Monterrey, Mex. (D. F. Martin, P.O. Box 1033, Brownsville, Tex. 78521)

*10–14.* New Zealand Institution of **Engineers,** conf., Wellington. (F. N. Stace, P.O. Box 3047, Wellington, N.Z.)

*12–16.* American College of **Cardiology,** 13th annual, New Orleans, La. (P. Reichert, Empire State Bldg., New York, N.Y. 10001)

*13–14.* Texas **Industrial Pharmacy** Seminar, Austin. (L. R. Parker, Pharmacy Extension Service, Univ. of Texas, Austin)

*15–16.* **Atomic Energy,** Japanese natl. symp., Tokyo. (Atomic Energy Soc. of Japan c/o Atomic Energy Research Inst., 1-1 Shiba-tamura-cho, Minato-ku, Tokyo)

*16–22.* **National Engineers'** Week, sponsored by the National Society of Professional Engineers, 2029 K St., NW, Washington, D.C. 20006)

*17–19.* American **Standards Assoc.,** 14th annual conf., Washington, D.C. (ASA, 10 E. 40 St., New York, N.Y. 10016)

*17–20.* **Metals** for Use at High Temperature, intern. symp., New York, N.Y. (D. A. Parks, Inst. of Metals Div., Metallurgical Soc., 345 E. 47 St., New York, N.Y. 10017)

*17–21.* **Information** Storage and Retrieval, 6th, Washington, D.C. (L. W. Hattery, American Univ., 1901 F St., NW, Washington, D.C. 20006)

*19–21.* National Soc. of **College Teachers** of Education, Chicago, Ill. (E. J. Clark, Indiana State College, Terre Haute, Ind.)

*19–21.* **Solid-State Circuits,** intern. conf., Philadelphia, Pa. (L. Winner, 152 W. 42 St., New York, N.Y. 10036)

*19–22.* American **Educational Research**

Assoc., Chicago, Ill. (J. R. Gerberich, 1201 16th St., NW, Washington, D.C.)

*19–5.* Pan American **Medical** Assoc., 39th congr., the Americas, during a cruise aboard the S.S. *Independence*. (J. J. Eller, 745 Fifth Ave., New York, N.Y.)

*23–27.* Technical Assoc. of the **Pulp and Paper** Industry, 49th annual, New York, N.Y. (TAPPI, 360 Lexington Ave., New York, N.Y. 10017)

*23–28.* **Otorhinolaryngology and Bronchoesophagology**, 9th Pan American congr., Bogota, Colombia. (C. M. Norris, 3401 N. Broad St., Philadelphia, Pa. 19140)

*24–25.* Atmospheric Movements of **Radioactive Materials**, Geneva, Switzerland. (World Meteorological Organization, Geneva)

*24–25.* **Writing-Improvement** Programs for Engineers, seminar, New York, N.Y. (C. A. Meyer, RCA Commercial Engineering, Harrison, N.J.)

*24–28.* Institution of **Electrical Engineers**, intern. conf. on transmission aspects of communications networks, London, England. (IEE, Savoy Pl., London, W.C.2)

*25–26.* **Dairy Engineering**, natl. conf., East Lansing, Mich. (C. W. Hall, College of Agriculture, Michigan State Univ., East Lansing)

*26–28.* **Biophysical** Soc., Chicago, Ill. (W. Sleator, Jr., Washington Univ. Medical School, 660 Kingshighway, St. Louis 10, Mo.)

*26–28.* **Scintillation and Semiconductor** symp., Washington, D.C. (G. A. Morton, RCA Laboratories, Princeton, N.J.)

*27–28.* Cellular Basis for the Action of **Cardiac Drugs**, Philadelphia, Pa. (Heart Assoc. of Southeastern Pa., 318 S. 19 St., Philadelphia 3)

*27–28.* National Assoc. for **Mental Health**, annual conf., London, England. (General Secty., 39 Queen Anne St., London, W.C.1)

*27–29.* American Acad. of **Forensic Sciences**, Chicago, Ill. (W. J. R. Camp, 1853 W. Polk St., Chicago 12)

*27–29.* American **Physical** Soc., Tucson. Ariz. (K. K. Darrows, American Physical Soc., Columbia Univ., New York, N.Y. 10027)

### March

*1–4.* Canadian Assoc. of **Radiologists**, annual, Vancouver, B.C. (A. I. Ekstrand, 1555 Summerhill Ave., Montreal 25, P.Q., Canada)

*1–15.* **Raman Spectroscopy**, colloquium, Stuttgart, Germany. (J. Goubeau, Dept. of Chemistry, Technische Hochschule Stuttgart, 7 Stuttgart N)

*2–4.* Fundamental **Cancer Research**, 18th annual symp., Houston, Tex. (R. J. Shalek, Dept. of Physics, Univ. of Texas, Houston)

*2–6.* **Analytical Chemistry** and Applied Spectroscopy, Pittsburgh, Pa. (R. B. Fricioni, Allegheny Ludlum Steel Corp., Research Center, Brackenridge, Pa.)

*2–6.* Applied **Meteorology**, 5th conf., American Meteorological Soc., Atlantic City, N.J. (A. Hilsenrod, Federal Aviation Agency, Atlantic City)

*3–7.* Inter-American **Nuclear Energy** Commission, 5th, Valparaiso, Chile.) Pan

American Union, Washington, D.C. 20006)

*3–21.* World **Health** Assembly, 17th annual, Geneva, Switzerland. (WHO, Palais des Nations, Geneva)

*4–6.* **Thermal Radiation** of Solids, symp., San Francisco, Calif. (W. D. Harris, Engineering and Sciences Extension, Univ. of California, Berkeley 4)

*5–6.* Theoretical and Applied **Mechanics**, southeastern meeting Atlanta, Ga. (Dept. of Short Courses and Conferences, Georgia Inst. of Technology, Atlanta 30332)

*5–7.* **Macromolecular** Colloquium. Freiburg im Breisgau, Germany. (Institut für Makromolekulare Chemie, Univ. Freiburg, Stefan-Meier-Str. 31, 78 Freiburg im Breisgau)

*5–7.* Pacific **Sociological** Assoc., Coronado, Calif. (S. M. Dornbusch, Stanford Univ., Stanford, Calif.)

*6–8.* Society of **Nuclear Medicine**, southwestern chapter, Houston, Tex. (S. N. Turiel, SNM, 333 North Michigan Ave., Chicago 1, Ill.)

*6–8.* National **Wildlife** Federation, 28th annual, Las Vegas, Nev. (NWF, 1412 16th St., NW, Washington. D.C. 20036)

*7–12.* **Proctology**, 16th teaching seminar, Miami Beach, Fla. (J. Reichert, 147-41 Sanford Ave., Flushing, N.Y. 11355)

*8–12.* **Water Resources** Engineering, conf., Mobile, Ala. (American Soc. of Civil Engineers, 345 E. 47 St., New York 10017)

*8–15.* North American **Clinical Dermatologic Soc.**, Mexico City, Mexico. (E. F. Finnerty, 510 Commonwealth Ave., Boston, Mass.)

*9–10.* **Aerodynamic Testing** Conf., American Inst. of Aeronautics and Astronautics, Washington, D.C. (J. N. Fresh, David Taylor Model Basin, Code 630, U.S. Navy, Washington, D.C.)

*9–11.* Society of **Toxicology**, annual, Williamsburg, Va. (C. S. Weil, Mellon Inst., 4400 Fifth Ave., Pittsburgh, Pa. 15213)

*9–13.* National Assoc. of **Corrosion Engineers**, 20th conf., Chicago, Ill. (W. H. Schultz, Dearborn Chemical Corp., Chicago, Ill.)

*9–13.* Peaceful Applications of **Nuclear Energy**, 5th inter-American symp., Valparaiso, Chile. (J. D. Perkinson, Inter-American Nuclear Energy Commission, Pan American Union, Washington, D.C. 20006)

*10–12.* **Exploding Conductor** Phenomena, 3rd conf., Boston, Mass. (W. G. Chace, Air Force Cambridge Research Laboratories, Hanscom Field, Bedford, Mass.)

*10–14.* American Inst. of **Chemical Engineers**, New Orleans, La. (AIChE, 345 E. 47 St., New York 17)

*11–12.* Instrument Soc. of America, 14th conf. on **instrumentation** for the iron and steel industry, Pittsburgh, Pa. (N. F. Simcic, Research Laboratory, Jones and Laughlin Steel Corp., 900 Agnew Rd., Pittsburgh 30)

*12–13.* **Information** Organization, New Brunswick, N.J. (S. Artandi, Graduate School of Library Service, Rutgers Univ., New Brunswick)

*12–15.* International College of Applied **Nutrition**, Las Vegas, Nev. (D. C. Collins, Suite 503, 7046 Hollywood Blvd., Los Angeles, Calif. 90028)