edge lengths of 150 nm ± 5 nm and nanospheres with diameters of 67 nm ± 9 nm. The researchers said that the ratio of cubes to spheres is close to the theoretical ratio (1:2) of the number of holes with octahedral and tetrahedral symmetry, respectively, in the face-centered cubic colloidal crystal template. Using transmission electron microscopy on a single nanocube, the mesopore symmetry was shown to be cubic, pore diameters were estimated at 2.4 nm, and the average unit cell length was determined to be 18.4 nm ± 0.8 nm. Ordered mesopores could not be observed in the nanospheres. The symmetry axis of the nanocubes coincided with the cubic mesopore arrays, suggesting to the researchers that the confinement by the colloidal crystal template influenced the arrangement of the surfactant micelles. Overall mesostructural ordering was verified with small-angle x-ray scattering but detailed information was obtained from nitrogen sorption measurements, which showed that the entire pore system is accessible to guest molecules, which, the researchers said, "lends itself to a wide range of applications involving host-guest interactions where guests are separated by predefined distances." They said, "[T]he nanoparticle architecture has an advantage over larger mesostructures in that guests are confined to a countable number of cages limited by the 3D volume of the nanoparticle."

STEVEN TROHALAKI

Machinable Ti_3SiC_2/Hydroxyapatite Bioceramic Composites Prepared by Spark Plasma Sintering

Hydroxyapatite (HAp) is a well known biomaterial for its excellent biocompatibility and ability to bond chemically with host bones. However, the poor mechanical properties of HAp prevent its wide application for load-bearing implants. Researchers at Tsinghua University in China have reported a Ti_3SiC_2/HAp composite with a significant improvement of bending strength and fracture toughness compared with those of monolithic HAp.

As described in the October issue of the *Journal of the American Ceramic Society* (p. 3331; DOI: 10.1111/j.1551-2916.2007.01882.x), S.L. Shi and W. Pan prepared Ti_3SiC_2/ $(Ca_{10}(PO_4)_6(OH)_2)$ composites using spark plasma sintering.

The mechanical properties of the fabricated Ti_3SiC_2/HAp were examined using the three-point bending test and the Vickers hardness test. The bending strength and fracture toughness of the composites were improved significantly with adding Ti_3SiC_2. With 50 vol% Ti_3SiC_2, maximum bending strength and fracture toughness values were achieved with 250 MPa ± 10 MPa and 3.9 MPa·$m^{1/2}$ ± 0.1 MPa·$m^{1/2}$, respectively. The bending strength and fracture toughness were two to three times and two to five times higher than that of monolithic HAp. The researchers attribute the increase of bending strength to matrix strengthening. They also attribute the enhancement of fracture toughness to the synergistic effect of matrix strengthening and energy-absorbing mechanisms of individual grains of Ti_3SiC_2 platelets.

To characterize the machinability of the composites, the specimen was tested using cemented carbide drills. No evidence of large-scale cracking or chipping was seen in the drilled hole when the Ti_3SiC_2 content was higher than 20 vol%, suggesting an excellent machinability according to the researchers. The brittleness index (ratio of the Vickers hardness to the fracture toughness) of the composites decreases with increasing Ti_3SiC_2 content. The researchers conclude that Ti_3SiC_2/HAp composites have excellent mechanical properties and machinability, and "may be attractive for practical applications of novel bone repair and replacement materials."

JING ZHANG

News of MRS Members/Materials Researchers

Joanna Aizenberg has been appointed Gordon McKay Professor of Materials Science in Harvard University's Faculty of Arts and Sciences and its School of Engineering and Applied Sciences (SEAS).

Lilac Amirav of the Technion, Haifa, received the **Sara Lee Schupf Postdoctoral Award** by Weizmann Institute of Science to conduct her postdoctoral research on "Improved Solar Energy Harvesting with a Semiconductor-Metal Nanorod Photocatalyst" at the University of California, Berkeley.

V.S. Arunachalam of the Center for Study of Science, Technology & Policy in Bangalore, Distinguished Services Professor at Carnegie Mellon University in Pittsburgh, and former Scientific Adviser to India's Defence Minister & Secretary received the **Lifetime Achievement Award** from the Indian Institute of Metals.

Jacques Aschenbroich has been named President and CEO of Saint-Gobain Corporation (Valley Forge, Pa.).

Anna C. Balazs, Distinguished Professor of Chemical and Petroleum Engineering and Robert Von der Luft Professor in the University of Pittsburgh's chemical and petroleum engineering department, received a **Women in the Material World Award** from the Women and Girls Foundation of Southwest Pennsylvania for her work in determining how building and manufacturing materials interact at the molecular level.

James L. Dowey has been named Vice President and Managing Director of Smithers Rapra Technology—formerly Rapra Technology (Shropshire, U.K.).

Mildred Dresselhaus, Institute Professor of Electrical Engineering and Physics at the Massachusetts Institute of Technology, has been selected as the North American recipient of a **2007 L'Oréal-UNESCO Award for Women in Science** for "conceptualizing the creation of carbon nanotubes."

Paul Drzaic has been appointed Chief Technology Officer at Unidym, Inc. (Menlo Park, Calif.), a majority-owned subsidiary of Arrowhead Research Corporation.

Rodney Ewing of the University of Michigan received the **2006 Lomonosov Gold Medal** from the Russian Academy of Sciences in recognition of outstanding achievements in the natural sciences and humanities.

Daryush Ila, head of the Alabama A&M University Research Institute, has been elected to serve as the Executive Director of the Alabama Experimental Program to Stimulate Competitive Research (EPSCoR) Steering Committee.

Himanshu Jain of Lehigh University has received the **2007 Otto Schott Research Award** for his outstanding work in advancing the understanding of the movement of atoms inside glass.

Marshall G. Jones of General Electric's Global Research Center has been named to receive the **2007 Arthur L. Schawlow Award** by the Laser Institute of America.

Alexander King has been named the new director of the U.S. Department of Energy's Ames Laboratory at Iowa State University. The appointment is effective January 1, 2008.

Walter Kob of the Université Montpellier, France has received the **2007 Otto Schott Research Award** in acknowledgement of his research in the static and dynamic properties of glasses and supercooled liquids with the help of computer simulations.

Jennifer A. Lewis, the Hans Thurnauer Professor of Materials Science and Engineering and Willett Faculty Scholar of

Engineering at the University of Illinois at Urbana-Champaign, has been named as the director of the UIUC Frederick Seitz Materials Research Laboratory.

William A. Little, professor Emeritus of experimental condensed matter physics from Stanford University, and the President and CEO of MMR Technologies (Mountain View, Calif.), has been awarded the **Samuel C. Collins award** for outstanding contributions to cryogenic technology, presented at the 2007 Cryogenic Engineering Conference.

Edward McGaffigan Jr., Commissioner of the U.S. Nuclear Regulatory Commission (NRC), is the recipient of the **2007 Henry DeWolf Smyth Nuclear Statesman Award**, presented at the Nuclear Energy Assembly.

Joseph B. Milstein, patent attorney, has joined Hiscock & Barclay, LLP (Syracuse, NY).

Devesh Misra of the University of Louisiana, Lafayette, has received two awards from the Institute of Materials, Minerals and Mining, UK: the **2007 Charles Hatchett Award** for outstanding work on the science and technology of niobium and its alloys, and the **2007 Composite Award**.

Julie Nucci has been named Director of Education Programs in the Center for Nanoscale Systems at Cornell University.

Baldev Raj, Distinguished Scientist & Director of the Indira Gandhi Centre for Atomic Research, Kalpakkam, was named **National Metallurgist in Research and Academia** by the Indian Institute of Metals.

Jill Simpson has been named general manager of Crosslink Energy Materials (St. Louis, Mo.).

Genia Sklute of the Technion, Haifa, received the **Sara Lee Schupf Postdoctoral Award** by Weizmann Institute of Science to conduct her postdoctoral research on "New Multicomponent Approach for the Creation of Chiral Quaternary Centers in the Carbonyl Allylation Reactions" at Stanford University.

Sharada Srinivasan, Faculty Fellow at the Indian Institute of Science, Bangalore, received the **Certificate of Excellence** from the Indian Institute of Metals.

J. Fraser Stoddart will join the Northwestern University faculty as Board of Trustees Professor of Chemistry, where he will direct the new Center for the Chemistry of Integrated Systems.

Subra Suresh, the Ford Professor of Engineering at the Massachusetts Institute of Technology (MIT), has been named dean of MIT's School of Engineering.

Tim Weihs, co-founder of Reactive NanoTechnologies, Inc., was appointed to the President's Council of Advisors on Science and Technology's (PCAST) New Nanotechnology Technical Advisory Group (nTAG).

David B. Williams, formerly vice provost for research at Lehigh University, was selected as the fifth president of The University of Alabama in Huntsville. □

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