

average diameter of 500 nm, by spin coating. The hydrophobic PAA coating of the substrates enabled the particles to be deposited without using a surfactant. Areas of up to 50 μm of polycrystalline polystyrene nanoparticles were observed.

The nanoparticles act as a nanomask during the etching process with oxygen. To achieve some nanodome top surface with PAA functionalities, the nanoparticles were not completely etched. The plasma treatment was stopped in time to leave some residual nanoparticles on top of the nanodomains. These nanoparticles were then removed by an ultrasound bath in water. Under atomic force microscopy and scanning electron microscopy studies, the resulting surface showed two-dimensional,

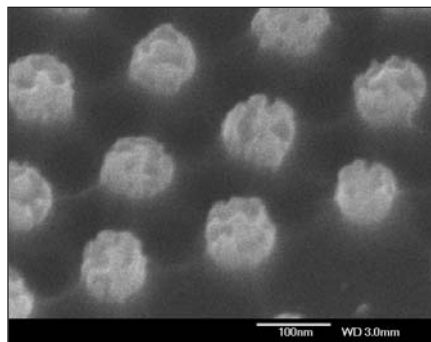


Figure 1. Field-emission gun scanning electron microscopy image of the BSA protein selectively bound on a polymer film of acrylic-acid dome top surface.

crystalline, PAA truncated cones separated by substrate-like zones. Because the top of the truncated cones had not been exposed to the oxygen plasma, it retained the carboxylic functionalities of the polymer. Measurements from atomic force microscopy images showed flat plateaus of ~ 250 nm in diameter. Protein absorption experiments revealed that the molecules were selectively bound to the functional plateau of the domes, with no protein found in the surrounding matrix (Figure 1). The researchers anticipate applications for biosensor development because of the possibility of controlling the surface distribution of nanostructures in a macroscopic area of the devices.

MARIA CORTALEZZI

Review Articles and Special Issues

Acta Materialia **52** (10) (June 7, 2004) contains D.J. Larson, A.K. Petford-Long, Y.Q. Ma, and A. Cerezo, "Information Storage Materials: Nanoscale Characterisation by Three-Dimensional Atom Probe Analysis," p. 2847.

Journal of Applied Physics **95** (11) (June 1, 2004) contains R.C. Ewing, W.J. Weber, and J. Lian, "Nuclear Waste Disposal—Pyrochlore ($\text{A}_2\text{B}_2\text{O}_7$): Nuclear Waste Form for the Immobilization of Plutonium and 'Minor' Actinides," p. 5949.

Low Temperature Physics **30** (5) (May 2004) contains S.V. Lubenets, V.D. Natsik, and L.S. Fomenko, "Plasticity and Strength of Metal Oxide High-Temperature Superconductors (Review)," p. 345.

Physics of the Solid State **46** (5) (May 2004) contains Yu.I. Golovin, "Magnetoplastic Effects in Solids," p. 789.

Applied Mechanics Reviews **57** (2) (March 2004) contains V.A. Lubarda, "Constitutive Theories Based on the Multiplicative Decomposition of Deformation Gradient: Thermoelasticity, Elastoplasticity, and Biomechanics," p. 95; R. Krueger, "Virtual Crack Closure Technique: History, Approach, and Applications," p. 109; and H. Irschik and H.J. Holl, "Mechanics of Variable-Mass Systems—Part 1: Balance of Mass and Linear Momentum," p. 145.

Solid State Electronics **48** (8) (August 2004) is a special issue on "Strained-Si Heterostructures and Devices."

Chaos: An Interdisciplinary Journal of Nonlinear Science **14** (2) (June 2004) contains a focus section on "Global Dynamics in Spatially Extended Mechanical Systems."

Journal of Applied Physics **95** (11) (June 1, 2004) contains a special section with papers from the 9th Joint Magnetism and

Magnetic Materials Intermag Conference

Journal of Computing and Information Science in Engineering **4** (2) (June 2004) is a special issue on "Virtual Reality for Product Development."

Journal of Engineering Mechanics **130** (6) (June 2004) is a special issue on "Constitutive Modeling of Geomaterials."

Journal of Bridge Engineering **9** (3) (May/June 2004) contains a special section on "Steel Bridges."

Journal of Biomedical Optics **9** (3) (May 2004) contains a special section on "Biomedical Optics and Women's Health."

Journal of Performance of Constructed Facilities **18** (2) (May 2004) is a special issue on "Blast Mitigation and Design Against Terrorism."

IEEE Transactions on Device and Materials Reliability **4** (1) (March 2004) is a special issue containing selected papers from the 2003 Institute of Electrical and Electronics Engineers (IEEE) International Symposium on Physical and Failure Analysis of Integrated Circuits (IPFA).

Journal of Fluids Engineering **126** (2) (March 2004) contains papers from International Mechanical Engineering Congress 2002 in New Orleans, La., from the symposia on the "Rheology and Fluid Mechanics of Nonlinear Materials," "Advances in Processing Science," and "Electric and Magnetic Phenomena in Micro and Nano-Scale Systems."

Organic Electronics **5** (1–3) (March 2004) is a special issue containing papers from the European Materials Research Society symposium on "Current Trends in Crystalline Organic Semiconductors: Growth Modelling and Fundamental Properties."

News of MRS Members/Materials Researchers

Paul Alivisatos, Chancellor's Professor of Chemistry and Materials Science at the University of California, Berkeley, has been elected into the **National Academy of Sciences**.

Yoel Fink, Thomas B. King Assistant Professor of Materials Science at the Massachusetts Institute of Technology, has received the **National Academy of Sciences Award for Initiatives in Re-**

search in recognition of his "pioneering contributions and ingenuity in the creative design and development of photonic materials and devices." The award, presented since 1981, was established by AT&T Bell Laboratories in honor of William O. Baker.

Edith Flanigen, a consultant for UOP, a joint venture between Union Carbide and Allied Signal, has been named to

receive the **2004 Lemelson-MIT Lifetime Achievement Award** in recognition of her pioneering work in chemistry and materials science to help make petroleum refinement cleaner and safer.

Nick Holonyak, the John Bardeen Professor of Electrical and Computer Engineering and Physics at the University of Illinois, has been named to receive the **2004 Lemelson-MIT Prize for Inven-**

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tion in recognition of his invention of the practical light-emitting diode in 1962.

Charles Lieber, Mark Hyman Jr. Professor of Chemistry at Harvard University, has been elected into the **National Academy of Sciences**.

Paras Prasad, SUNY Distinguished Professor in the Department of Chemistry in the University at Buffalo's College of Arts and Sciences and Samuel P. Capen Chair, has been awarded the 2004

Morley Medal by the Cleveland section of the American Chemical Society.

Gary L. Smith, a staff scientist at the Department of Energy's Pacific Northwest National Laboratory, has been appointed chair of the ASTM International Committee C26 on Nuclear Fuel Cycle. This prominent and influential committee develops standards important to work done on the nuclear fuel cycle, including

spent nuclear fuel, waste materials, and repository waste packaging and storage. Smith also was honored with the **Harlan J. Anderson Award**, which is presented annually to a member of C26 who has made outstanding contributions toward the successful operation of the committee.

Robert L. Snyder has been named **Distinguished Fellow** of the International Centre for Diffraction Data (ICDD).

The **Franklin Institute** has announced award recipients for 2004, including:

Roger Bacon, Amoco Corporation and Union Carbide, retired, who received the **Benjamin Franklin Medal in Mechanical Engineering** for his fundamental research on the production of graphite whiskers and the determination of their microstructure and properties, for his pioneering development efforts in the production of the world's first continuously processed carbon fibers and the world's first high modulus, high-strength carbon fibers using rayon precursors, and for his contributions to the development of carbon fibers from alternative starting materials;

Robert B. Meyer, Brandeis University, who received the **Benjamin Franklin Medal in Physics** for his creative synthesis of theory and experiment demonstrating that tilted, layered liquid-crystal phases of chiral molecules are ferroelectric, thus launching both fundamental scientific advancement in the field of soft condensed matter physics and in the development of liquid-crystal displays that meet the demands of current technology; and

Robert E. Newnham, The Pennsylvania State University, who received the **Benjamin Franklin Medal in Electrical Engineering** for his invention of multi-phase piezoelectric transducers and their spatial architecture, which has revolu-

tionized the field of acoustic imaging.

The **Presidential Early Career Awards for Scientists and Engineers** have been given to 57 researchers, including the following MRS members:

Susmita Bose (Washington State University);

Christine Orme (Lawrence Livermore National Laboratory);

Michelle L. Pantoya (Texas Tech University);

Bridget Rogers (Vanderbilt University); and

Gregory Neil Tew (University of Massachusetts).

The **Institute for Scientific Information** (Philadelphia, Pa.) has identified the top 10 most cited materials scientists for the period of January 1993–October 2003, including MRS members:

Anthony G. Evans (University of California—Santa Barbara);

Akihisa Inoue (Tohoku University, Japan);

Terry Langdon (University of Southern California);

Galen D. Stucky (University of California—Santa Barbara); and

Ruslan Z. Valiev (Ufa State Aviation Technical University—Russia).

The **International Centre for Diffraction Data** has selected six recipients for the 2004 **Ludo Frevel Crystallography**

Scholarship Program:

Geoffrey Kwai-Wai Kong, University of Melbourne/St. Vincent's Institute of Medical Research, Australia, for exploration into "Crystallographic Studies of the Amyloid Precursor Protein (AAP)";

Chong Lim, University of Illinois at Urbana-Champaign, Urbana for research concerning "Reaction Path and Crystallography of CoSi₂ Formation on Si(001) by Reactive Deposition Epitaxy";

Andrew Locock, University of Notre Dame, for "Crystal Structure and Synchrotron Radiation Study of Uranyl Oxysalts of Phosphate and Arsenate—Implications for Remediation";

Robin T. Macaluso, Louisiana State University, for research involving "X-ray and Neutron Diffraction Studies for Understanding Geometrically Frustrated Systems";

Petra Simoncic, University of Bern, Switzerland, for studies focusing on "Defect Structure of the Natural and Synthetic Zeolites Mordeinite—Structure Characterization of Dye Modified, Synthetic Mordeinite"; and

Kimberly Tait, University of Arizona, for "Investigations into the Stability, Morphology and the Crystal Structure of the Coexistence of Structure I and Structure II Methane-ethane Clathrate Hydrates—Occurrence and Geological Implications." □

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