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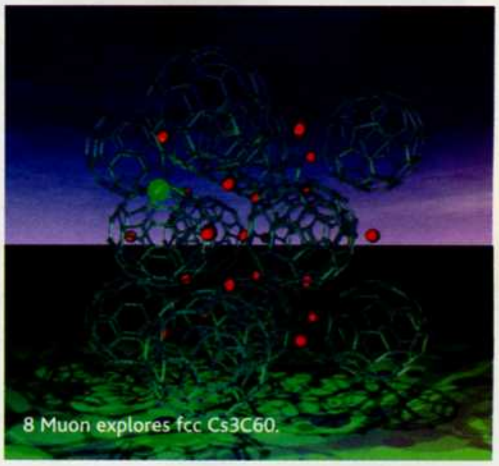


8 Muon explores fcc Cs3C60.

13 Veined wing.

14 Salvinia with water droplet.

Cover Image

This "nano-flower" was taken by scanning electron microscopy (SEM) at a ~60 degree tilt angle. The star-shaped structure was prepared by e-beam lithography and plasma etching of an ordinary silicon wafer. The structure was subsequently thermally oxidized at 900 Celsius. This is a regime where oxide does not flow viscously and stress builds up. As a result, the standing walls are oxidized through fully in the middle of the walls whereas self-limiting oxidation takes place at the top leaving a silicon core nanowire with an oxide shell. This core/shell nanowire is then moving up, supposedly due to the built in strain, following a slight HF etch which partly disconnects the top wire from the base of the wall.

Professor Jan Linnros, Dept of Microelectronics and Applied Physics, Royal Institute of Technology, Electrum 229, 164 40 Kista, SWEDEN

Lead story 16

Materials science and the sensor revolution

For the past decade, Byrne *et al.*, have been investigating strategies to develop ways to provide chemical sensing platforms capable of long-term deployment in remote locations. This key objective has been driven by the emergence of ubiquitous digital communications and the associated potential for widely deployed wireless sensor networks (WSNs).

Robert Byrne, Fernando Benito-Lopez, Dermot Diamond

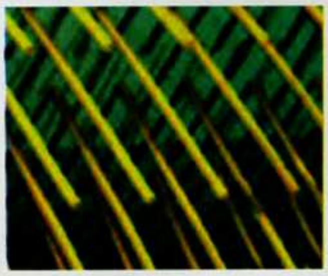
Sensing devices

Review 24

Immunosensing using nanoparticles

Immunosensing technology is taking advantage of the lastest developments in materials science and inparticular from the nanomaterials field. Because of their unprecedented optical tunability and electrical/electrochemical qualities, we are seeing significant developments in the design of novel immunoassays.

Alfredo de la Escosura-Muñiz, Claudio Parolo, Arben Merkoçi

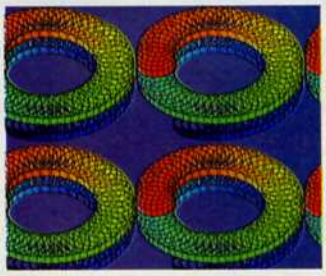


Review 36

Metal oxide nanowires as chemical sensors

It is almost a decade since the first presentation of metal oxide nanowires as chemical sensors. In this review Comini and Sberveglieri review the most recent developments in bottom up and top down approaches for application of chemical sensors.

E. Comini, and G. Sberveglieri



Review 46

Chemical sensitivity of porphyrin assemblies

Porphyrins show unique binding properties that are widely exploited in nature to accomplish essential functions for life; the potential mimic of these functions with synthetic counterparts has provided the basis of many kinds of chemical sensors. In this paper some recent results on supramolecular porphyrin aggregates exploited for chemical sensor development are illustrated and discussed.

Corrado Di Natale, Donato Monti, and Roberto Paolesse

Next issue

Materials Today **will look at atoms and molecules up close and personal**

Bistability, higher harmonics, and chaos in atomic force microscopy

This review highlights the non-linear dynamics in the amplitude modulation mode and how they affect nanoscale material characterisation.

A close-up view into spin structures with soft X-ray microscopy

The spin of the electron and its associated magnetic moment marks the basic unit for magnetic properties of matter.

Contact resonance atomic force microscopy

Contact resonance atomic force microscopy (CR-AFM) is a powerful method for measuring material elastic properties at the nano-scale.

New scanning probe microscopy techniques for analyzing OPV materials and devices

Organic solar cells hold promise as an economical means of harvesting solar energy due to their ease of production and processing.