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materialstoday

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Science City

How do we change attitudes to science; encouraging young people to become the scientists?

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Some of Nature's Little Tricks

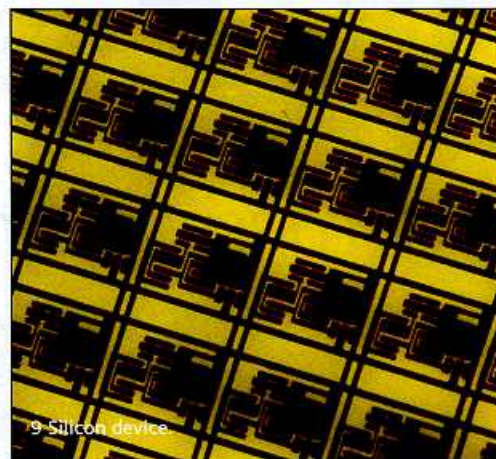
Nature makes materials, and so do we. But Nature's materials are very different from ours.

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Narrowing the nano discourse?

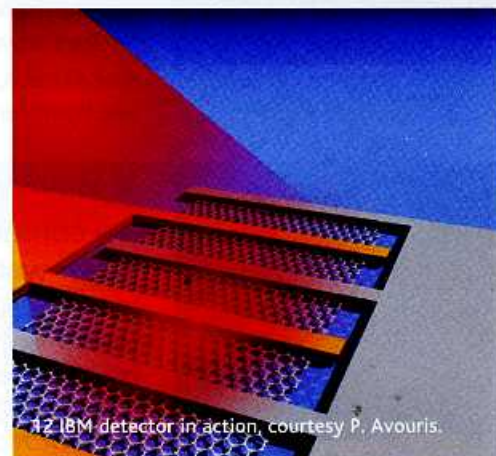
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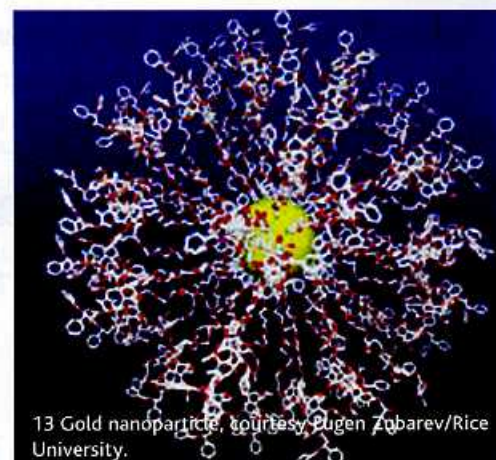
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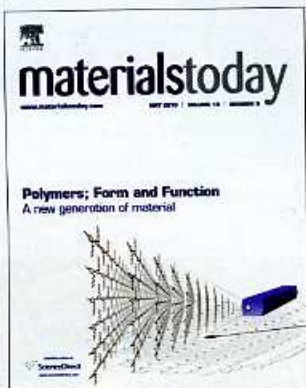


Cover Image

Polymer semiconductor crystals

Courtesy of Jung Ah Lim, Feng Liu, Sunzida Ferdous, Murugappan Muthukumar, and Alejandro L. Briseno, Polymer Science and Engineering Department, University of Massachusetts, Amherst, MA 01003, USA — Lead story, page 12.





Lead story 14

Polymer semiconductor crystals

One of the long-standing challenges in the field of polymer semiconductors is to figure out how long interpenetrating and entangled polymer chains self-assemble into single crystals from the solution phase or melt. This article describes the basic concept of crystallization and highlight some of the advances in polymer crystallization from crystals to nanocrystalline fibers.

Jung Ah Lim, Feng Liu, Sunzida Ferdous, Murugappan Muthukumar, and Alejandro L. Briseno

Next issue

Materials Today takes a look at self assembly at the interface

Dynamic actuation at nano-bio interfaces

The nanoscale dimensions, sensitive electronic control, and flexible architecture of new generations of nanomaterials and nanofabrication hold immense promise, not only for electronic devices, but also biological interfaces.

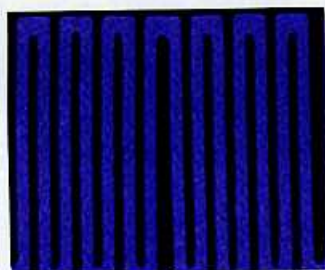
Colloidal self-assembly at an interface

Mix a drop of water in to a vial of oil, with some surfactant and a vigorous shake, that one droplet has become thousands, and the total interfacial area has increased by an order of magnitude or more.

Self-assembly of block copolymer thin films

Self-assembling soft materials continue to play an important role in meeting societal and economic goals for more efficient processes, cleaner energy generation, and smaller and hierarchically structured devices.

Polymers; Form and Function

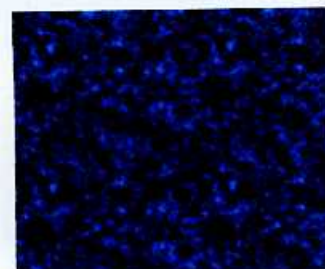


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Designing polymer surfaces via vapor deposition

Asatekin *et al.*, concentrate on two CVD polymerization methods that closely translate solution chemistry to vapor deposition; and describe the basic concepts underlying these methods and the resultant advantages over other thin film coating techniques.

Ayşe Asatekin, Miles C. Barr, Salmaan H. Baxamusa, Kenneth K.S. Lau, Wyatt Tenhaeff, Jingjing Xu, and Karen K. Gleason

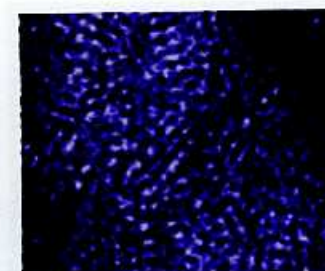


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Ion-containing polymers: new energy & clean water

Hickner describes the current state-of-the-art in his understanding of water-facilitated ion transport in polymeric membranes and provides some directions for future endeavors in the field, such as anion exchange membranes.

Michael A. Hickner



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Optoelectronics using block copolymers

In this article, Botiz and Darling emphasize methods by which block copolymer self-assembly can be utilized to rationally design and control the shape and dimension of resulting nanostructures and therefore to develop idealized morphologies.

Ioan Botiz, Seth B. Darling

