Contents

materialstoday
Available online at www.sciencedirect.com SCIENCE DIRECT

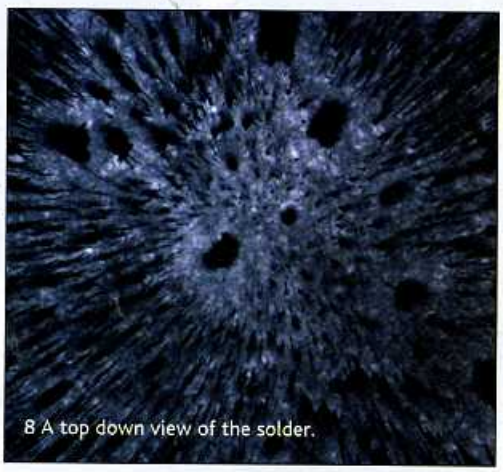
Regulars

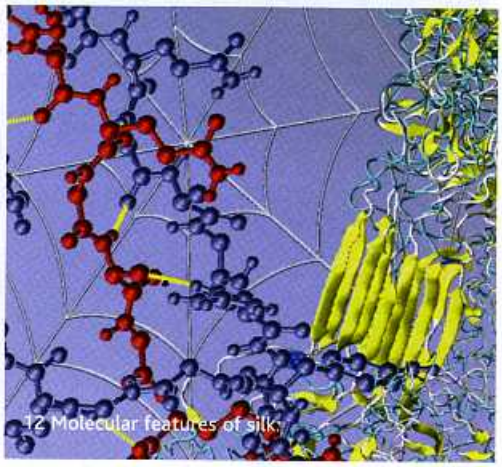
Updates

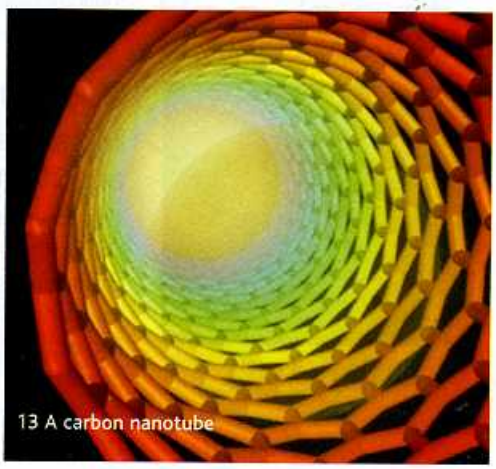
Cover Image

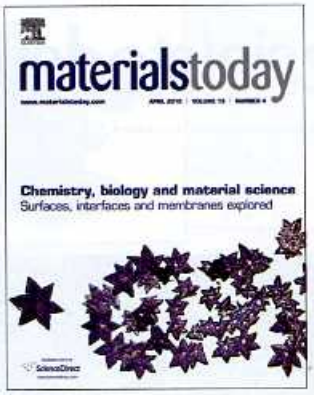
Bacteriorhodopsin protein crystals in lipid bicelle. Optical microscopy, magnification 200X.

Courtesy of Patrick W. Cooley,
Biomedical Scientist - Biomedical Printing,
MicroFab Technologies, Inc.
1104 Summit Avenue, Suite 110,
Plano, Texas 75074.


8 A top down view of the solder.


12 Molecular features of silk.


13 A carbon nanotube



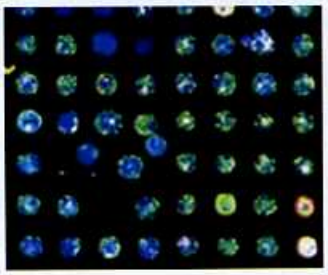
Lead story 14

Chemistry and material science at the cell surface

Cell surfaces are fertile ground for chemists and material scientists to manipulate or augment cell functions and phenotypes. This not only helps to answer basic biology questions but also has diagnostic and therapeutic applications. In this review, we summarize the most recent advances in the engineering of the cell surface.

Weian Zhao, Grace Sock Leng Teo, Namit Kumar, Jeffrey M. Karp

Chemistry, biology and material science

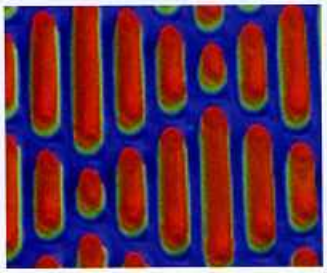


Review 22

Chemical patterning in biointerface science

Ogaki *et al.*, provide an overview of state-of-the-art fabrication tools for creating chemical patterns over length scales ranging from millimeters to micrometers to nanometers. The importance of highly sensitive surface analytical tools in the development of new chemically patterned surfaces is also highlighted.

Ryosuke Ogaki, Morgan Alexander, and Peter Kingshott

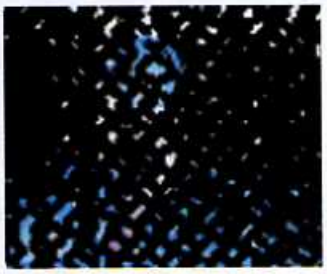


Review 36

Non-toxic antifouling strategies

This review focuses on antifouling biomaterials for marine and biomedical applications. The surface chemistry and physical properties of the substratum are both crucial to preventing the recruitment of biofouling organisms. Natural antifouling surfaces exhibit both chemical and physical attributes. The chemical structure is discussed briefly as it relates to both anti-fouling and fouling-release properties.

Chelsea M. Magin, Scott P. Cooper and Anthony B. Brennan



Review 46

Molecularly controlled functional architectures

This paper summarizes some of the authors efforts in designing and synthesizing bio-functional layers at solid/solution interfaces, characterizing their structure and dynamics, and optimizing their functional properties. They explore different materials and architectures, focusing here on hydrogels and lipid bilayer membranes.

Eva-Kathrin Sinnera, Sandra Ritza, Yi Wang, Jakub Dostálek, Ulrich Jonas, and Wolfgang Knoll

Next issue

***Materials Today* takes an indepth look at Polymer, form and function**

Designing Polymer Surfaces

CVD methods significantly augment the capabilities of traditional surface modification techniques for designing polymeric surfaces.

Block copolymers for idealized optoelectronics

Block copolymers are emerging as a promising class of materials for both photovoltaic energy conversion and development of novel high-performance light emitting devices.

Polymer Semiconductor Crystals

Understanding the theory and concept of crystallization of polymer semiconductors is key to future research

Ion-Containing Polymers

New generations of materials are being sought as solid-state electrolytes that facilitate fast ion conduction in mechanically robust, yet thin, polymer membranes.