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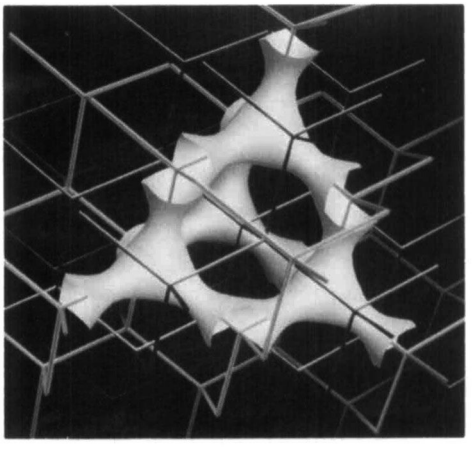
POLYMERS

SPECIAL FEATURE

MRS NEWS

DEPARTMENTS



ON THE COVER: *The cover shows a computer-generated image of a surface representing the highly ordered microphase separated morphology of a block copolymer. This surface is of constant mean curvature and is a member of the family of mathematical surfaces which includes the classical Schwarz D surface. The inset shows a digitized bright-field TEM image (left half) of the microdomain morphology of a polystyrene-polyisoprene star block copolymer alongside the computer-simulated [111] projection of the model structure whose PS/PI interface is the computer-generated image described above. See "Observation of Defects in Crystalline Polymers by HREM" by D.C. Martin and E.L. Thomas in this issue.*

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ABOUT THE MATERIALS RESEARCH SOCIETY

The Materials Research Society (MRS) is a nonprofit scientific association founded in 1973 to promote interdisciplinary goal-oriented basic research on materials of technological importance. Membership in the Society includes more than 5,900 scientists from industrial, government, and university research laboratories in the United States and more than 25 countries.

The Society's interdisciplinary approach to the exchange of technical information is qualitatively different from that provided by single-disciplinary professional societies because it promotes technical exchange across the various fields of science affecting materials development. MRS sponsors two major international annual meetings encompassing approximately 30 topical symposia, as well as numerous single-topic scientific meetings each year. It recognizes professional and technical excellence, conducts short courses, and fosters technical exchange in various local geographical regions through Section activities and Student Chapters on university campuses.

MRS is an Affiliated Society of the American Institute of Physics and participates in the international arena of materials research through associations with professional organizations such as European MRS.

MRS publishes symposia proceedings, the *MRS BULLETIN*, *Journal of Materials Research*, and other volumes on current scientific developments.

For further information on the Society's activities, contact MRS Headquarters, 9800 McKnight Road, Suite 327, Pittsburgh, Pennsylvania 15237; telephone (412) 367-3003; facsimile (412) 367-4373.

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Mk II Specifications

Dynamic Mechanical Thermal Analyser

Dynamic Mechanical

FREQUENCIES

16 freq. in the range 0.01 to 200 Hz
0.01, 0.02, 0.03, 0.1, 0.2, 0.3, 1, 2, 3, 5, 10, 20, 30, 50, 100, 200 Hz
Selected by push button or remotely by computer

MODULUS RANGE

Young's 10^5 N/m^2 - 10^{11} N/m^2
Rigidity 10^3 N/m^2 - 5 x 10^8 N/m^2
Tensile 10^6 N/m^2 - 10^{11} N/m^2
Accuracy depends on optimizing clamping

DAMPING RANGE

Tan δ 0.0001 - 9.999

RESOLUTION

On Tan δ 0.0001

MEASUREMENT MODES

YOUNG'S MODULUS - bending of double or single cantilever (bar specimen length range 1.8-4.6 cm, thickness range 0.1-5.0 mm, maximum breadth 1.8 cm).
RIGIDITY MODULUS, shear sandwich (cross-section typically 1 cm^2, thickness 0.3 cm).
TENSILE (typically, length 1 cm, cross-section 0.01 cm^2).

DISPLACEMENT

10 different strains covering a 20 times range.
(Minimum 0.01 mm; maximum 0.25 mm)
Selected by push button or remotely by computer.

Thermal Control

CONTROL AND MEASUREMENT

Platinum resistance sensor placed 1 mm from sample surface

TEMPERATURE RANGE

-150°C to +500° C

SCAN RATES

Heating 1° C/10 min to 20° C/min
Cooling 1° C/10 min to 15° C/min
Resolution 0.1° C over whole range

ACCURACY

Sample temperature normally within 1° C of indicated temperature for scan rates up to 5° C/min.

MODES

Heat, Cool, Cycle.
Isothermal hold at any point. Front panel selection or remotely controlled.

COMPUTER CONTROL

IEEE interface, full software control.

POLYMER LABORATORIES

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DMTA