Materials Research Society 1986 Fall Meeting

December 1-6

Boston Marriott Hotel The Westin Hotel Copley Place Boston, Massachusetts

Details in this issue . .

- Technical Symposia
- Forum on the MSE Study
- Short Courses
- Job Placement Center
- Equipment Exhibit
- Registration Forms

Publications from 1986 MRS FALL MEETING

The following prices are effective until **March 30, 1987.** Prices after this date will be higher. Order your copies today to receive priority shipment.

Volume 74

Symposium A

Beam-Solid Interactions and Transient Processes Editors: S.T. Picraux, M.O. Thompson, J.S. Williams MRS Members \$34.00 U.S. Nonmembers \$39.00 Foreign Nonmembers \$44.00

> Volume 75 Symposium B

Photon, Beam and Plasma Stimulated Chemical Processes at Surfaces

Editors: V.M. Donnelly, I.P. Herman, M. Hirose MRS Members \$34.00 U.S. Nonmembers \$39.00 Foreign Nonmembers \$44.00

Volume 76

Symposium C Science and Technology of Microfabrication

Editors: R.E. Howard, E.L. Hu, S. Pang, S. Namba MRS Members \$32.00 U.S. Nonmembers \$38.00 Foreign Nonmembers \$43.00

Volume 77

Symposium D Interfaces, Superlattices, and Thin Flims Editors: J.D. Dow, I.K. Schuller, J. Hilliard MRS Members \$42.00 U.S. Nonmembers \$48.00 Foreign Nonmembers \$52.00

Volume 78

Symposium E Advances in Structural Ceramics Editors: P.F. Becher, M.V. Swain, S. Somiya MRS Members \$26.00 U.S. Nonmembers \$32.00 Foreigr Nonmembers \$37.00

Volume 79

Symposium F Scattering, Deformation and Fracture in Polymers Editors: B. Crist, T.P. Russell, E.L. Thomas, G.D. Wignall MRS Members \$26.00 U.S. Nonmembers \$32.00 Foreign Nonmembers \$37.00

Volume 80

Symposium G

Science and Technology of Rapidly Quenched Alloys Editors: M. Tenhover, L.E. Tanner, W.L. Johnson MRS Members \$34.00

U.S. Nonmembers \$39.00

Volume 81

Symposium H

Foreign Nonmembers \$44.00

High-Temperature Ordered Intermetallic Alloys Editors: C.C. Koch, C.T. Liu, N.S. Stoloff, O. Izumi MRS Members \$30.00 U.S. Nonmembers \$38.00 Foreign Nonmembers \$48.00

Volume 82

Symposium I

Characterization of Defects in Materials

Editors: R.W. Siegel, R. Sinclair, J.R. Weertman MRS Members \$32.00 U.S. Nonmembers \$37.00 Foreign Nonmembers \$42.00

Volume 83

Symposium J Physical and Chemical Properties of Thin Metal Overlayers and Alloy Surfaces Editors: D.M. Zehner, D.W. Goodman MRS Members \$26.00

https://U.S.gNonmembers:\$31600.blished ForeiganNagmembers:\$36.00

Volume 84

Symposium L Scientific Basis for Nuclear Waste Management Editors: J.K. Bates, W.B. Seefeldt MRS Members \$45.00 U.S. Nonmembers \$50.00 Foreign Nonmembers \$55.00

Volume 85

Symposium M **Microstructural Development During the Hydration of Cement** *Editors: L. Struble, P. Brown* MRS Members \$29.00 U.S. Nonmembers \$34.00 Foreign Nonmembers \$39.00

Volume 86

Symposium N Fly Ash and Coal Conversion By-Products Characterization, Utilization and Disposal III Editor: G.J. McCarthy MRS Members \$32.00 U.S. Nonmembers \$37.00 Foreign Nonmembers \$42.00

Volume 87

Symposium O Materials Processing in the Reduced Gravity Environment of Space Editors: R.H. Doremus, P.C. Nordine MRS Members \$26.00

U.S. Nonmembers \$29.00 Foreign Nonmembers \$33.00

Volume 88 Symposium P

Optical Fiber Materials and Properties Editors: S.R. Nagel, G. Sigel, J.W. Fleming, D.A. Thompson MRS Members \$28.00 U.S. Nonmembers \$34.00 Foreign Nonmembers \$39.00

> Volume 89 Symposium Q

Diluted Magnetic (Semimagnetic) Semiconductors Editors: J.K. Furdyna, R.L. Aggarwal, S. von Molnar MRS Members \$27.00 U.S. Nonmembers \$32.00 Foreign Nonmembers \$38.00

> Volume 90 Symposium R

Materials for Infrared Detectors and Sources Editors: J.F. Schetzina, J.T. Cheung, R.F.C. Farrow MRS Members \$27.00 U.S. Nonmembers \$32.00 Foreign Nonmembers \$38.00

EXTENDED ABSTRACTS FROM THE 1986 FALL MEETING

EA-8 Symposium K Graphite Intercalation Compounds Editors: M.S. Dresselhaus, G. Dresselhaus, S.A. Solin MRS Members \$8.00 U.S. Nonmembers \$10.00 Foreign Nonmembers \$10.00

EA-9 Symposium S Superconducting Materials Editors: J. Bevk, A.I. Braginski MRS Members \$8.00 U.S. Nonmembers \$10.00 Foreign Nonmembers \$10.00

EA-10 Symposium U Fractal Aspects of Materials Editors: D.W. Schaefer, S.H. Liu, R.B. Laibowitz, B.B. Mandelbrot MRS Members \$8.00 U.S. Nonmembers \$10.00 Foreign Nonmembers \$10.00

MRS BULLETIN

Materials Research Society Vol. XI No. 5 September/October 1986

A a a a man a ma

Advanced Materia Research in the Aluminum Industr



JUST TOUCHING THE SURFACE? DO YOU KNOW WHERE YOUR INTERFACE IS?



RBS can find it for you! **R**utherford **B**ackscattering **S**pectrometry– Quantitative atomic stoichiometry without standardization and nondestructive multi-layered depth profiling to 10,000Å.

Operation of RBS Surface Analyzer is a piece of cake. RBS provides quick (15 minutes) and accurate (\pm 5%) surface and depth information applicable to metals, silicides, catalysts, polymers, glasses, and coatings.

Send us several samples; RBS will find your interface. Get in touch with General lonex Corporation, 19 Graf Road, Newburyport, MA 01950–Attention: online by cambrid stern (617) 462-7147.



MRS BULLETIN

A Publication of the Materials Research Society Volume XI, Number 5 September/October 1986 ISSN: 0883-7694

TECHNICAL FEATURES

15	Progress in the Development of a Mechanical		
	Properties Microprobe		
	W. C. Oliver		
22	Materials Research at Alcoa Noel Iarrett		
26	Development of Direct Drive, High-Gain Capsul		

- 26 Development of Direct Drive, High-Gain Capsules for Inertial Fusion: A Materials Challenge J.H. Campbell
- 31 Modeling of the Solidification Process-Historical Survey John Ågren
- 34 Up Close: Materials Science at Argonne National Laboratory Frank Fradin
- 36 Up Close: Northwestern University Materials Research Center Stephen Carr

INTERNATIONAL

57 E-MRS Symposium Covers Computer Simulation of Casting and Solidification

57 CRTM Offers Collaborative Materials Research in Aquitaine

SPECIAL FEATURE

41 Preview: 1986 MRS Fall Meeting

ISSUES

- 37 Controls on Sensitive Research— Their Evolution
- 39 Militarily Critical Technologies List
- 40 AAAS Survey—Scientific Societies' Policy on Foreign Attendance

MRS NEWS

- 5 Material Matters
- 49 Call for Papers: 1987 MRS Spring Meeting
- 52 Candidates Sought for Graduate Student Awards at 1987 Spring Meeting

MDC DILLETIN

53 Treasurer's Report

DEPARTMENTS

2	Book Reviews	12	Research Resources	56	Conference Reports
6	Research/Researchers	12	Editor's Choice	58	Meetings Calendar
11	From Washington	55	Upcoming Conferences	- 59	Classified

ON THE COVER

Alithalite alloy 2090 is being tested and evaluated by the aerospace industry. Compared to the alloy it is intended to replace, 2090 provides a 7% density reduction, with increased strength and stiffness. See "Materials Research at Alcoa" by Noel Jarrett on p. 22-24 in this issue.

MRS BULLETIN is published bimonthly by the Materials Research Society for its members and others interested in materials science. Correspondence and submissions are invited. They should be brief and typewritten (double-spaced), and the author's affiliation must be indicated. Address all correspondence to the Editor.

1986 MRS Officers

President G. E. Pike Sandia National Laboratories	Past President E. N. Kaufmann Lawrence Livermore National Laboratory	MRS BULLETIN Editorial Board Chairman E. N. Kaufmann Lawrence Livermore National Laboratory	
First Vice President and President-Elect K. C. Taylor GM Research Laboratories	MRS Executive Director J. B. Ballance	MRS BULLETIN Editor G. A. Oare	
Second Vice President J. E. E. Baglin	MRS Headquarters European-MRS P. Siffert Centre de Recherches Nucleaires Laboratoire PHASE 67037 Strasbourg Cedex France (88) 28 65 43	Assistant Editor F. M. Wieloch	
1BM Research Center		Contributors J.E.E. Baglin, J. Raloff	
Secretary R. C. Ewing University of New Mexico		Graphic Artist P. M. Gruden	
Treasurer		Editorial Assistant J. Dininny	
C. W. Draper AT&T Technologies		Advertising M. E. Kaufold	

Materials Research Society • 9800 McKnight Road, Suite 327 • Pittsburgh, PA 15237 • telephone (412) 367-3003