MATERIALS RESEARCH SOCIETY SYMPOSIUM PROCEEDINGS VOLUME 907

## In Situ Electron Microscopy of Materials

November 28 – December 2, 2005 Boston, Massachusetts, USA

Printed from e-media with permission by:

Curran Associates, Inc. 57 Morehouse Lane Red Hook, NY 12571 www.proceedings.com

ISBN: 1-55899-862-4

Some format issues inherent in the e-media version may also appear in this print version.

CAMBRIDGE UNIVERSITY PRESS Cambridge, New York, Melbourne, Madrid, Cape Town, Singapore, São Paulo, Delhi, Tokyo, Mexico City

Cambridge University Press 32 Avenue of the Americas, New York, NY 10013-2473, USA

www.cambridge.org

Materials Research Society 506 Keystone Drive, Warrendale, PA 15086 http://www.mrs.org

©Materials Research Society 2028

This publication is in copyright. Subject to statutory exception and to the provisions of relevant collective licensing agreements, no reproduction of any part may take place without the written permission of Cambridge University Press.

First published 2028

CODEN: MRSPDH

ISBN: 3/77:;;/:84/6

Cambridge University Press has no responsibility for the persistence or accuracy of URLs for external or third-part Internet Web sites referred to in this publication and does not guarantee that any content on such Web sites is, or will remain, accurate or appropriate.

## Additional copies of this publication are available from:

Curran Associates, Inc. 57 Morehouse Lane Red Hook, NY 12571 USA Phone: 845-758-0400 Fax: 845-758-2634 Email: curran@proceedings.com Web: www.proceedings.com



## TABLE OF CONTENTS

- 1 Length Scale Effect on Deformation and Failure Mechanisms of Ultra-Fine Grained Aluminum Follstaedt, D;Han, J;Hattar, K;Hearne, S;Robertson, I;Saif, T
- 7 In-Situ TEM Study of Thermally Induced Voids in 180 Nm Cu Interconnects An, J.H.; Ferreira, P.J.
- 13 In-Situ TEM Studies of Magnetization Reversal Processes in Magnetic Nanostructures Bromwich, Thomas; Dunin-Borkowski, Rafal; Jackson, Victoria; Kasama, Takeshi; Kohn, Amit; Petford-Long, Amanda; Ross, Caroline
- 22 In-Situ TEM Observation of Electromagnetic Field in Some Real Materials Fukunaga, Keiichi;Hirayama, Tsukasa;Kuroda, Kotaro;Saka, Hiroyasu;Sasaki, Katsuhiro;Wang, Zhouguang
- 28 In-Situ Observations of Martensitic Transformation in Pure Ti Thin Films Using the Dynamical Transmission Electron Microscope (DTEM) Armstrong, Michael;Browning, Nigel;Campbell, Geoff:Colvin, Jeffrey;Kim, Judy;King, Wayne;LaGrange, Thomas;Reed, Bryan;Stuart, Brent
- 34 In Situ HREM Observation of Phase Transformation Process in FePt and FePtCu Nanoparticles Furusawa, Gen-ichi;Hattori, Yasushi;Kamino, Takeo;Kuroda, Kotaro;Nakanishi, Masatoshi;Saka, Hiroyasu;Sasaki, Katsuhiro;Waki, Kokichi
- 40 In Situ TEM Investigation of Abnormal Grain Growth in Nanocrystalline Nickel

Follstaedt, David; Hattar, Khalid; Knapp, James; Robertson, Ian

- 51 On the Mechanism of Resistive Switching in MIM Capacitors an Approach with In-Situ TEM Experiments Schroeder, Herbert
- 57 Mechanisms of Grain Growth in Free-Standing Nanograined Gold Thin Films Gregg, J;Hattar, K;Lei, C;Robertson, I
- 63 In Situ Recrystallization Imaging of Polycrystalline Ni-S Alloy by SEM CORNEN, Marilyne;Le Gall, Rene

- 68 A Versatile Three-Contact Electrical Biasing Transmission Electron Microscope Specimen Holder for Electron Holography and Electron Tomography of Working Devices Broom, Ronald;Dunin-Borkowski, Rafal;Fischione, Paul;Gronsky, Jeff;Kasama, Takeshi;Matsuya, Lionel;Midgley, Paul;Newcomb, Simon;Robins, Alan;Smith, David;Thomas, Christine;Twitchett, Alison
- 74 In-Situ Microscopic Study of Cu Intragranular Electromigration Chen, Kuan-Chia; Chen, Lih-Juann; Liao, Chien-Neng; Wu, Wen-Wei