Philosophical Magazine ›

Volume 86, 2006 - Issue 32

466 Views | 48 CrossRef citations to date | 0 Altmetric

Original Articles

Microstructure, indentation and work hardening of Cu/Ag multilayers

M. Verdier§, H. Huang¶, F. Spaepen, J. D. Embury & H. Kung

Pages 5009-5016 | Received 20 Jan 2006, Accepted 29 Mar 2006, Published online: 19 Aug 2006

Cite this article https://doi.org/10.1080/14786430600746440

Sample our Physical Sciences Journals

>> Sign in here to start your access to the latest two volumes for 14 days

Abstract

Instrumented indentation and tensile tests were performed on free standing Cu/Ag multilayer thin films with layer thicknesses in the range 0.85–900 nm. The effect of layer thickness can be described by a Hall–Petch relationship. The work-hardening rate in the tensile test depends on layer thickness, which indicates that the interfaces create storage sites for dislocations and follows an inverse power law.

Previous article | View issue table of contents | Next article

Acknowledgments

Los Alamos National Laboratory and NSERC Canada are acknowledged for financial support. The work at Harvard was supported by the Harvard Materials Research Science

and Engineering Center under contract number DMR 98-09363. H.H. acknowledges support from an AlliedSignal predoctoral fellowship.

Notes

§Present address: LTPCM (CNRS UMR 29), Domaine Universitaire, BP75 38402, St. Martin d'Héres Cedex, France.

¶Present address: General Atomic, Internal Fusion Technology Division, San Diego, CA, USA.

Additional information

Notes on contributors

M. Verdier§
§Present address: LTPCM (CNRS UMR 29), Domaine Universitaire, BP75 38402, St. Martin d'Héres Cedex, France.

H. Huang¶
¶Present address: General Atomic, Internal Fusion Technology Division, San Diego, CA, USA.

Related Research Data

On dislocation storage and the mechanical response of fine scale microstructures
Source: Acta Metallurgica et Materialia
Recovery of AlMg alloys: flow stress and strain-hardening properties
Source: Acta Materialia
Plastic Behaviour of Cu / Ni Multilayers
Source: MRS Proceedings
Dislocation-Density–Related Constitutive Modeling

Source: Unknown Repository

Measurements of stress during vapor deposition of copper and silver thin films and multilayers

Source: Journal of Applied Physics

Elastic and plastic properties of thin films on substrates: nanoindentation techniques

Source: Materials Science and Engineering A

Physics and phenomenology of strain hardening: the FCC case

Source: Progress in Materials Science

Related research

People also read | Recommended articles | Cited by 48

Information for

- Authors
- R&D professionals
- Editors
- Librarians
- Societies

Open access

- Overview
- Open journals
- Open Select
- Dove Medical Press
- F1000Research

Opportunities

- Reprints and e-prints
- Advertising solutions
- Accelerated publication
- Corporate access solutions

Help and information

- Help and contact
- Newsroom
- All journals
- Books

Keep up to date

Register to receive personalised research and resources by email

Sign me up

Copyright © 2026 Informa UK Limited Privacy policy

Cookies Terms & conditions Accessibility

Registered in England & Wales No. 01072954
5 Howick Place | London | SW1P 1WG

Taylor & Francis by informa