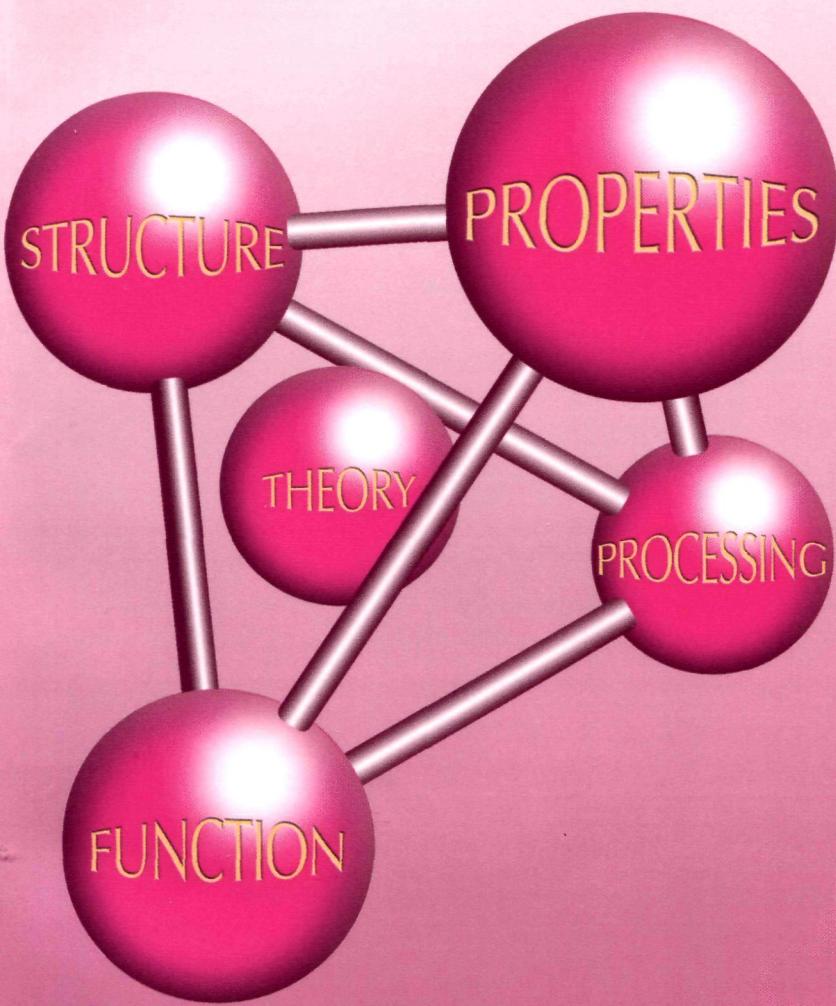


# Scripta MATERIALIA

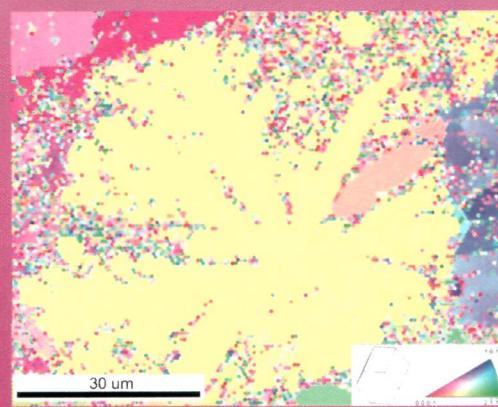
A LETTERS JOURNAL



## VIEWPOINT SET

### *Architectured Materials*

Organized by Y. Brechet and D. Embury



# Scripta MATERIALIA

Volume 68, Issue 1  
(Published 19 October 2012)

## CONTENTS

### Viewpoint Set no. 52

#### “Architected Materials”

Organized by Y. Brechet and D. Embury

Y. Brechet & J.D. Embury

M. Ashby

J.W.C. Dunlop & P. Fratzl

D.J. Lloyd

R. Cicoria, B. Chehab & H. Zurob

H.T. Wang, N.R. Tao & K. Lu

O. Bouaziz

E. Bele & G.D. Hibbard

A. Fallet, P. Lhuissier, L. Salvo, C.L. Martin,  
A. Wiegmann & M. Kabel

J.-P. Masse & D. Poquillon

A. Rossoll & A. Mortensen

P. Bollen, N. Quiévy, I. Huynen, C. Bailly,  
C. Detrembleur, J.M. Thomassin & T. Pardoen

### Regular Articles

C.M. Enloe, K.O. Findley, C.M. Parish,  
M.K. Miller, B.C. De Cooman & J.G. Speer

H. Li, Z. Gao, H. Yin, H. Jiang, X. Su & J. Bin

- |    |   |
|----|---|
| 1  | Architecture materials: Expanding materials space   |
| 4  | Designing architected materials   |
| 8  | Multilevel architectures in natural materials   |
| 13 | Recent developments in controlling the architecture for property optimization in Al-based materials           |
| 17 | Diffusion as a method for producing architected materials   |
| 22 | Architected surface layer with a gradient nanotwinned structure in a Fe–Mn austenitic steel                   |
| 28 | Geometrically induced strain hardening  |
| 31 | Reinforcement of microtruss cellular materials by nanocrystalline electro-deposition                          |
| 35 | Multifunctional optimization of random hollow sphere stackings  |
| 39 | Mechanical behavior of entangled materials with or without cross-linked fibers                                |
| 44 | On the load-bearing efficiency of open-cell foams: A comparison of two architectures related to two processes |
| 50 | Multifunctional architected materials for electromagnetic absorption  |
| 55 | Compositional evolution of microalloy carbonitrides in a Mo-bearing microalloyed steel                        |
| 59 | Effects of Er and Zr additions on precipitation and recrystallization of pure aluminum                        |

(Continued on inside back cover)

INDEXED IN Current Contents, BIOSIS/CAS Selects, Camb. Sci. Abstr., Eng. Ind. Monthly and Author Ind., IBZ, Energy Res. Abstr., Energy Data Base, Metals Abstr., World Alum. Abstr., and the MSCI. Also covered in the abstract and citation database SciVerse Scopus®. Full text available on SciVerse ScienceDirect®

Printed by Polestar Wheatons Ltd, Exeter, UK

ISSN 1359-6462

Available online at [www.sciencedirect.com](http://www.sciencedirect.com)

SciVerse ScienceDirect



1359-6462(201301)68:1;1-Z

# *Scripta MATERIALIA*

(Contents continued from outside back cover)

M. Yan, Y. Liu, G.B. Schaffer & M. Qian	63	In situ synchrotron radiation to understand the pathways for the scavenging of oxygen in commercially pure Ti and Ti-6Al-4V by yttrium hydride
W. Xu, D.P. Edwards, X. Wu, M. Stoica, M. Calin, U. Kühn, J. Eckert & K. Xia	67	Promoting nano/ultrafine-duplex structure via accelerated $\alpha$ precipitation in a $\beta$ -type titanium alloy severely deformed by high-pressure torsion
M. Deutges, I. Knorr, C. Borchers, C.A. Volkert & R. Kirchheim	71	Influence of hydrogen on the deformation morphology of vanadium (100) micropillars in the $\alpha$ -phase of the vanadium–hydrogen system
G. Constantinescu, Sh. Rasekh, M.A. Torres, M.A. Madre, J.C. Diez & A. Sotelo	75	Enhancement of the high-temperature thermoelectric performance of $\text{Bi}_2\text{Ba}_2\text{Co}_2\text{O}_x$ ceramics
B.R. Golla & B. Basu	79	Hot-pressed $\text{TiB}_2$ –10 wt.% $\text{TiSi}_2$ ceramic with extremely good thermal transport properties at elevated temperatures (up to 1273 K)
K. Hazeli, J. Cuadra, P.A. Vanniamparambil & A. Kontsos	83	In situ identification of twin-related bands near yielding in a magnesium alloy
U.F.H. Suhuddin, V. Fischer & J.F. dos Santos	87	The thermal cycle during the dissimilar friction spot welding of aluminum and magnesium alloy
M. Dubey, X. Sauvage, F. Cuvilly, S. Jouen & B. Hannoyer	91	Atomic-scale characterization of the nucleation and growth of $\text{SnO}_2$ particles in oxidized CuSn alloys