



# INTERMETALLICS

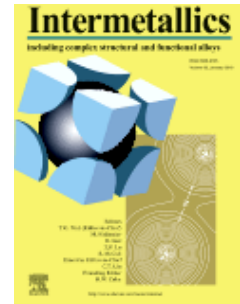
including complex structural and functional alloys

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### DESCRIPTION

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This journal is a platform for publishing innovative research and overviews for advancing our understanding of the structure, property, and functionality of complex metallic alloys, including intermetallics, metallic glasses, and high entropy alloys.

The journal reports the science and engineering of metallic materials in the following aspects: Theories and experiments which address the relationship between property and structure in all length scales. Physical modeling and numerical simulations which provide a comprehensive understanding of experimental observations. Stimulated methodologies to characterize the structure and chemistry of materials that correlate the properties. Technological applications resulting from the understanding of property-structure relationship in materials. Novel and cutting-edge results warranting rapid communication. The journal also publishes special issues on selected topics and overviews by invitation only.

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*Examples:*

Reference to a journal publication:

[1] J. van der Geer, J.A.J. Hanraads, R.A. Lupton, The art of writing a scientific article, *J. Sci. Commun.* 163 (2010) 51–59.

Reference to a book:

[2] W. Strunk Jr., E.B. White, *The Elements of Style*, fourth ed., Longman, New York, 2000.

Reference to a chapter in an edited book:

[3] G.R. Mettam, L.B. Adams, How to prepare an electronic version of your article, in: B.S. Jones, R.Z. Smith (Eds.), *Introduction to the Electronic Age*, E-Publishing Inc., New York, 2009, pp. 281–304.

Reference to a website:

[4] Cancer Research UK, Cancer statistics reports for the UK. <http://www.cancerresearchuk.org/aboutcancer/statistics/cancerstatsreport/>, 2003 (accessed 13 March 2003).

Reference to a dataset:

[dataset] [5] M. Oguro, S. Imahiro, S. Saito, T. Nakashizuka, Mortality data for Japanese oak wilt disease and surrounding forest compositions, *Mendeley Data*, v1, 2015. <https://doi.org/10.17632/xwj98nb39r.1>.

*Journal abbreviations source*

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### **Keywords for Intermetallics**

The keywords for Intermetallics are separated into seven categories:

- A. MATERIAL TYPE
- B. ASPECT OR PROPERTY STUDIED
- C. SYNTHESIS AND PROCESSING
- D. STRUCTURAL FEATURES
- E. THEORY
- F. CHARACTERIZATION
- G. APPLICATION

#### **A. TYPES OF MATERIAL**

functional alloys (magnetic, electrical, biomedical)  
intermetallics (aluminides, silicides)  
high-entropy alloys  
metallic glasses (or amorphous metals)  
nanocrystalline metals  
porous materials  
shape-memory alloys  
thin films and multilayers

#### **B. ASPECT OR PROPERTY STUDIED**

age-hardening  
alloy design  
anelasticity  
anisotropy  
annealing  
atomic packing density  
biocompatibility  
bonding  
brittleness and ductility  
cavitation  
constitutive equation  
corrosion  
crack propagation  
creep (properties and mechanisms)  
crystal chemistry  
cyclic plasticity  
deformation map  
diffusion  
density functional theory  
dislocation structure

dispersion strengthening  
dynamic recrystallization  
elastic properties  
electrochemistry  
electronic structure  
electrical properties  
embrittlement  
equal channel angular pressing/extrusion  
erosion  
fatigue resistance and crack growth  
fracture  
fracture toughness  
glass forming ability  
glass transition and crystallization  
grain boundary diffusion  
grain boundary embrittlement  
grain boundary segregation  
grain boundary sliding  
hydrides  
hydrogen embrittlement  
hydrogen storage  
in situ  
indentation size effect  
internal friction  
inhomogeneous deformation  
irradiation effects  
magnetic properties  
martensitic transformation  
mechanical properties  
microalloying  
nanocrystalline structure  
nucleation and growth  
order/disorder transformation  
oxidation  
phase transformation (crystallographic aspects kinetics and mechanisms)  
plastic deformation mechanisms  
phase stability  
residual stresses  
self-assembly  
semi-solid  
shape-memory effects (including superelasticity)  
shear band  
slip system  
solid-solution hardening  
strain-aging  
stress relaxation  
superconducting properties  
superplasticity  
surface properties  
texture (macro- and micro-; including ODFs) (see also 'grain-boundary character distribution', Section D)  
thermal properties  
thermal stability  
thermoelectric properties  
thermodynamic properties  
toughness  
tribological properties  
twinning  
viscosity  
void formation and growth

work-hardening  
yield stress

### **C. PROCESSING (INCLUDING SYNTHESIS)**

casting (including segregation)  
coatings  
crystal growth  
electroplating  
focused ion beam machining  
friction stir processing  
functionally graded structure  
heat treatment  
hot isostatic pressing  
isothermal forging  
joining (welding, brazing, diffusion-bonding, etc.)  
laser processing and cladding  
mechanical alloying and milling  
microwave processing  
nanocrystals (see 'nanostructured materials', Section A)  
near-net-shape manufacturing  
spray forming  
thermoplastic forming  
powder metallurgy (including sintering and consolidation)  
purification  
rapid solidification  
reaction synthesis  
recrystallization and recovery (including grain growth)  
severe plastic deformation  
single-crystal growth (see 'crystal growth', this section)  
superplastic forming  
surface finishing  
thermomechanical processing (including extrusion, rolling and forging)  
deposition (including electron beam, sputtering, and electrodeposition)  
ultrasonic processing  
welding (see 'joining', this section)

### **D. STRUCTURAL FEATURES**

antiphase domain  
dislocation geometry and arrangement (including superdislocation)  
point defect (vacancy, anti-site, interstitial, impurity)  
planar faults  
plastic deformation unit  
free volume  
grain boundary  
martensitic structure  
microstructure  
interfaces  
segregation  
site occupancy

### **E. THEORY**

ab-initio calculations  
molecular dynamics simulation  
Monte Carlo simulation  
finite-element modeling  
defects: theory  
electronic structure, calculation  
mechanical properties, theory  
multiscale  
pair correlation function  
phase field modeling

phase stability, prediction  
ordering energies  
physical properties  
yield behavior

#### **F. CHARACTERIZATION**

*(to be indexed only where the technique is the main topic of the paper)*

analysis, chemical  
atom probe  
atomic force microscopy  
Auger electron spectroscopy  
chemical map  
differential scanning calorimetry  
differential thermal analysis  
diffraction/sacterring (electron, neutron and X-ray)  
digital image correlation  
electrochemical characterization  
electron backscatter diffraction  
electron microprobe  
electron microscopy, scanning  
electron microscopy, transmission  
extended X-ray absorption fine structure  
field ion microscopy  
high-speed photography  
internal stress measurement  
ion-beam methods  
mechanical testing  
metallographic techniques  
microscopy, various  
nanoindentation  
orientation imaging microscopy  
residual stress measurement  
scanning tunneling electron microscopy  
secondary ion mass spectrometry  
spectroscopic methods, various  
pole figure  
tomography  
trace element analysis  
x-ray tomography

#### **G. APPLICATION**

aero-engine components  
aerospace structures  
automotive uses, including engines (and other transportation uses)  
biomedical  
catalysis  
corrosion- and erosion-resistant applications  
damping  
dental  
ecosystem  
energy systems (including energy conversion)  
environmental  
furnace, including heating elements  
hydrogen storage and permeation  
MicroElectroMechanical (MEMS) and NanoElectroMechanical NEMS  
Sensor  
shape-memory alloy applications (actuators, couplings, etc.)  
superconducting  
thermoelectric power generation  
wear-resistant



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