INTERMETALLICS
including complex structural and functional alloys

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DESCRIPTION

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.

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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
defor- mation 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)

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/scattering (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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