

## Subject Index of Volume 211/212

- Acoustic absorption  
 acoustic absorption in high-temperature superconductors due to pseudo-Jahn–Teller centres, 292
- Acoustical properties of solids  
 internal friction and sound velocity of polycrystalline metals at very low temperatures, 27
- Acoustic emission  
 acoustic emission and self-organized criticality associated with fracture processes during hydrogen precipitation in niobium, 544
- Acoustic losses  
 ultrasonic attenuation in  $\alpha$ -quartz as a result of E' defect centres, 349
- Acoustic microscopy  
 thin film characterization using generalized Lamb waves and harmonic generation, 438
- Activation energy  
 the relation between internal friction and tensile creep deformation on alumina ceramics, 361
- Active damping  
 an approach to higher damping capacity: a comparison of material damping with computer-controlled damping, 589
- Adhesion  
 thin film characterization using generalized Lamb waves and harmonic generation, 438
- Ag/Pd multilayers  
 the anelastic study of Ag/Pd multilayers, 442
- Alloys  
 analysis of the Snoek relaxation in niobium–oxygen with low interstitial content, 41  
 internal friction and substitutional–interstitial interaction in niobium-based alloys, 75  
 stress relaxation in precipitation-hardenable alloys, 509  
 zener relaxation strength in b.c.c. and f.c.c. alloys, 522
- Alumina  
 the relation between internal friction and tensile creep deformation on alumina ceramics, 361
- Alumina fibres  
 study by mechanical spectroscopy of the dislocation substructure in an aluminium matrix composite reinforced by alumina fibres, 393
- Alumina particles  
 a study of the internal friction and modulus of epoxy-resin-dispersed nanometre-sized alumina particles, 390
- Aluminium  
 high-temperature internal friction in aluminium studied by isothermal mechanical spectrometry, 144  
 amplitude-dependent internal friction and dislocation inelastic strain in zinc and aluminium single crystals, 164  
 amplitude-dependent internal friction in dilute copper–aluminium alloys with three kinds of peaks, 173  
 study by mechanical spectroscopy of the dislocation substructure in an aluminium matrix composite reinforced by alumina fibres, 393  
 transient internal damping in aluminium-based metal matrix composites, 410  
 grain boundary sliding in thin substrate-bonded Al films, 424  
 an elasticity study of Al and Ag nanometre films, 446  
 damping capacity of Zn–Al alloy sheets, 514  
 analysis of the anelastic creep of Al and two Al–Cu alloys, 608
- Aluminium alloys  
 high temperature damping in dispersion-strengthened aluminium alloys, 414
- Aluminium bicrystals  
 non-linear mechanical relaxation associated with the viscous sliding of grain boundaries in aluminium bicrystals, 480
- Aluminized steel sheet  
 N ageing in aluminized steel sheet: an industrial application of high frequency internal friction measurements to point defect–interface interactions, 619
- Amorphous alloys  
 effect of passing electric current on the elastic property of amorphous alloys, 340  
 “Giant”  $\Delta E$  effect in amorphous alloys with perpendicular magnetic anisotropy, 560
- Amorphous materials  
 low energy excitations in amorphous materials: acoustic experiments and comparison with theoretical models, 321
- Amorphous structure  
 mechanical spectroscopy with hydrogen in intermetallic phases, 216
- Amplitude domain  
 amplitude-domain mechanical spectroscopy: a way to systematic analysis, 603
- Amplitude–frequency spectra  
 amplitude-dependent internal friction and dislocation inelastic strain in zinc and aluminium single crystals, 164
- Anelastic behaviour  
 numerical simulation of anelastic behaviour and micro-deformation due to dislocations, 155
- Anelastic creep  
 stress relaxation in precipitation-hardenable alloys, 509  
 analysis of the anelastic creep of Al and two Al–Cu alloys, 608
- Anelastic effects  
 features of elastic energy dissipation in the Pd–Ag–H system, 233
- Anelasticity  
 analysis of the oxygen relaxation spectrum in  $\text{YBa}_2\text{Cu}_3\text{O}_{6+x}$  at high temperature, 283  
 anelasticity and viscosity of superionic conducting glasses, 333  
 the relaxation strength and the relaxation time of anelasticity experiments on foils or thin plates, 539  
 measurement of stress relaxation strength in engineering materials for high precision mechanical applications, 596  
 anelastic properties of resonant transducers for cryogenic gravitational wave antennas, 644

## Anelastic properties

- non-linear elastic properties of CuZnAl alloys near martensitic transformation, 190
- anelastic and elastic properties of a synthetic monocrystal of bismuth germanate  $\text{Bi}_4\text{Ge}_3\text{O}_{12}$  at low temperatures, 640

## Anelastic relaxation

- stress-induced reorientation of oxygen-hydrogen complexes in a  $\text{Ta}_7\text{Nb}_{25}$  alloy, 62
- anelastic relaxation of H trapped by Zr in Nb single crystals, 80
- anelastic relaxation due to O-H pairs in Nb-Zr alloys, 226
- elastic aftereffect study of the ferroelastic tetragonal-orthorhombic phase transition in  $\text{YBa}_2\text{Cu}_3\text{O}_x$ , 264
- anelastic relaxation associated with the intergranular phase in silicon nitride and zirconia ceramics, 365
- influence of a changing microstructure on high temperature relaxation peaks, an example: WC-11wt.%Co, 397

## Anelastic solids

- fractional relaxation in anelastic solids, 534

## Anisotropic phase

- oxygen mobility in  $\text{YBa}_2\text{Cu}_3\text{O}_{7-\delta}$ , 296

## Anisotropic thermal expansion

- thermally activated recovery of polycrystalline cadmium deformed by anisotropic thermal expansion, 96

## Anisotropy

- "Giant"  $\Delta E$  effect in amorphous alloys with perpendicular magnetic anisotropy, 560

## Annealing

- thermal activation parameters and the annealing process of the hydrogen relaxation peak in an austenitic stainless steel, 241

## Anomalous internal friction peaks

- development of the torsion pendulum and early research on grain boundary relaxation and the cold-work internal friction peak, 7
- nonlinear mechanical relaxation associated with dislocation-point defect interaction, 90

## Antiferromagnetic transformations

- internal friction of Fe-Mn-Si-Cr shape-memory alloy, 208

## Antiferromagnetism

- ultrasonic investigation of  $\text{Nd}_2\text{Cu}_{1-x}\text{Zn}_x\text{O}_4$ : magnetoelastic interaction in the antiferromagnetic and paramagnetic state, 572

## Anti-vibration

- an approach to higher damping capacity: a comparison of material damping with computer-controlled damping, 589

## Apparent activation enthalpy

- high temperature background damping, 518

## Austenite

- austenitic-martensitic interface damping measured in shape memory alloys by a cyclic tensile machine, 632

## Automotive exhaust systems

- N ageing in aluminized steel sheet: an industrial application of high frequency internal friction measurements to point defect-interface interactions, 619

## Bainitic transformations

- studies on pre-bainitic transformation in Cu-Zn-Al-Mn alloy, 198

## Barium strontium titanate

- loss mechanisms in fine-grained ferroelectric ceramic thin films for ULSI memories (DRAMs), 451

## Barium titanate

- mechanical loss and elastic modulus associated with phase transitions of barium titanate ceramics, 352

## Bellessa effect

- relative variation in the sound velocity in polymethyl methacrylate at intermediate low temperatures, 337

## Bismuth germanate

- anelastic and elastic properties of a synthetic monocrystal of bismuth germanate  $\text{Bi}_4\text{Ge}_3\text{O}_{12}$  at low temperatures, 640

## Bordoni peak

- dislocation damping and associated modulus defect in copper crystals, 152

## Bordoni relaxation

- the problem of kink pair formation in f.c.c. metals, 111
- low-temperature mechanical loss measurements of 5N and 6N lead, 128

## Boundary mobility

- internal friction associated with grain boundaries in Ni-Cr alloys, 118

## C16 phases

- hydrogen-induced internal friction in  $\text{NiZr}_2$ , 229

## Cadmium

- thermally activated recovery of polycrystalline cadmium deformed by anisotropic thermal expansion, 96

## Calcia

- mechanical loss measurements on yttria- and calcia-stabilized zirconia, 66

## Carbides

- internal friction associated with grain boundaries in Ni-Cr alloys, 118

## Ceramics

- dependence of dissipation on magnetic field orientation in high  $T_c$  superconductor ceramics, 279
- internal friction study of transformation dynamics in  $\text{BaTiO}_3$  ceramics, 378

## Ceria ceramics

- internal friction in ceria ceramics doped with alkali earth metal oxides, 374

## Chemical analysis

- jet: physical and material aspects, 385

## Chemical vapour deposition

- evolution of magnetomechanical damping and magnetic properties of pure iron siliconized up to 5.5 wt.% by chemical vapour deposition, 568

## Chromium

- internal friction in Fe-Mn-Cr-Si-Ni shape memory alloys, 212
- internal friction and elastic moduli of V and Cr films on Si substrates, 434

## Coal

- jet: physical and material aspects, 385

## Cold-work peak

- development of the torsion pendulum and early research on grain boundary relaxation and the cold-work internal friction peak, 7

## Composites

- dynamical mechanical analysis of glass-transition peaks in polymers and composites, 381

## Computer-controlled damping

- an approach to higher damping capacity: a comparison of material damping with computer-controlled damping, 589

- Computer simulation
  - computer simulation on phonon transport in crystals with defects, 471
- Condensed matter
  - ultrasonic studies of condensed matter in the 1950s and beyond, 20
- Conductivity
  - internal friction in Bi–Sr–Ca–Cu–O glasses, 287
- Copper
  - dislocation damping and associated modulus defect in copper crystals, 152
  - amplitude-dependent internal friction in dilute copper–aluminium alloys with three kinds of peaks, 173
  - analysis of the anelastic creep of Al and two Al–Cu alloys, 608
- Copper alloys
  - internal friction due to twinning dislocations in Cu–Ge solid solution alloys, 107
- Copper–beryllium alloys
  - stress relaxation in precipitation-hardenable alloys, 509
- Coulomb interaction
  - interaction of dissolved atoms and “hydrogen Snoek-type relaxation” in Nb and Ta (computer simulation), 45
- Coupling
  - theoretical basis and general applicability of the coupling model to relaxations in coupled systems, 327
  - spin-phonon coupling in MnZn ferrites, 554
- Creep deformation
  - the relation between internal friction and tensile creep deformation on alumina ceramics, 361
- Cryogenic gravitational wave antennas
  - anelastic properties of resonant transducers for cryogenic gravitational wave antennas, 644
- Crystal defects
  - analysis of the oxygen relaxation spectrum in  $\text{YBa}_2\text{Cu}_3\text{O}_{6+x}$  at high temperature, 283
- Dampers
  - recent applications of high-damping hysteretic devices for the seismic isolation of buildings and bridges, 592
- Damping
  - self-organized criticality and dislocation damping, 124
  - modelling and numerical computation of transient internal damping due to thermal expansion mismatch between matrix and particles in metal matrix composites, 406
  - transient internal damping in aluminium-based metal matrix composites, 410
  - high temperature damping in dispersion-strengthened aluminium alloys, 414
  - austenitic–martensitic interface damping measured in shape memory alloys by a cyclic tensile machine, 632
- Damping capacity
  - damping capacity of Zn–Al alloy sheets, 514
- Damping effects
  - mechanical damping effects by flux lines in  $\text{YBa}_2\text{Cu}_3\text{O}_{6.9}$  thin films, 305
- Damping mechanism
  - internal friction and modulus defect in  $\alpha$ -Fe-based, high-alloyed (Cr, Mo) hidamets, 147
- Defect centres
  - ultrasonic attenuation in  $\alpha$ -quartz as a result of  $E'$  defect centres, 349
- Defects
  - computer simulation on phonon transport in crystals with defects, 471
- Dialastic effect
  - the temperature-independent component of the dialastic effect, 503
- Dielectric behaviour
  - elastic consequences of the dielectric behavior of  $\text{YBa}_2\text{Cu}_3\text{O}_{7-\delta}$ , 309
- Dielectric loss
  - mechanical and dielectric loss related to ferroelectric and relaxor phase transitions and domain walls, 356
- Diffusion
  - the study of internal friction in metal–metal layered materials, 498
- Dislocation
  - variation in internal friction and ultrasonic attenuation in aluminium during the early stage of fatigue loading, 93
- Dislocation breakaway
  - low-temperature thermal cycling of metal-matrix composites studied by the ultrasonic low-frequency stress-coupling technique, 169
- Dislocation damping
  - photoacoustic properties of  $\text{HgI}_2$  single crystals at different levels of ultrasound strain amplitude, 160
- Dislocation inelastic strain
  - amplitude-dependent internal friction and dislocation inelastic strain in zinc and aluminium single crystals, 164
- Dislocation kinks
  - nonlinear mechanical relaxation associated with dislocation–point defect interaction, 90
- Dislocation pinning
  - migration mechanism of self-interstitial atoms in Mo after low temperature irradiation. II. Dislocation pinning, 136
- Dislocation-point defect interaction
  - nonlinear mechanical relaxation associated with dislocation–point defect interaction, 90
- Dislocation relaxation
  - dislocation relaxation, 16
  - study of the dislocation relaxation peaks in easy glide deformed silver single crystals having different length-to-width ratios, 100
- Dislocations
  - early work on dislocations and point defects at low and intermediate frequencies, 4
  - nonlinear damping and harmonic generation in iron, 104
  - dislocation-like relaxations in cold deformed metallic glasses, 114
  - dislocation damping and associated modulus defect in copper crystals, 152
  - numerical simulation of anelastic behaviour and micro-deformation due to dislocations, 155
  - the influence of hydrogen and dislocations on the internal friction in yttrium, 249
  - theoretical basis and general applicability of the coupling model to relaxations in coupled systems, 327
  - influence of a changing microstructure on high temperature relaxation peaks, an example: WC–11wt.%Co, 397
- Dislocation substructure
  - study by mechanical spectroscopy of the dislocation substructure in an aluminium matrix composite reinforced by alumina fibres, 393
- Dissipative properties
  - elastic and dissipative properties of metals with an ultra-fine grain structure, 475
- Distribution function
  - relaxation strength and distribution function of an internal friction peak, 529

- Domain wall
  - mechanical and dielectric loss related to ferroelectric and relaxor phase transitions and domain walls, 356
- DRAMs
  - loss mechanisms in fine-grained ferroelectric ceramic thin films for ULSI memories (DRAMs), 451
- Dynamical mechanical analysis
  - dynamical mechanical analysis of glass-transition peaks in polymers and composites, 381
- Dynamic strain aging
  - sensitivity to dynamic strain aging in C-Mn steels, 132
- $\Delta E$  effect
  - "Giant"  $\Delta E$  effect in amorphous alloys with perpendicular magnetic anisotropy, 560
- Elastic aftereffect
  - elastic aftereffect study of the ferroelastic tetragonal-orthorhombic phase transition in  $YBa_2Cu_3O_x$ , 264
- Elastic anisotropy factor
  - elastic constants of some intermetallic compounds as determined by the rectangular parallelepiped resonance method, 585
- Elastic behaviour
  - investigations of the elastic behaviour in the vicinity of ferroelectric phase transitions, 185
  - ultrasonic anomalies and phase transitions in the  $Y_1Ba_2Cu_4O_8$  and the  $Y_{1-x}Ca_xBa_2Cu_4O_8$  systems, 260
- Elastic consequences
  - elastic consequences of the dielectric behavior of  $YBa_2Cu_3O_{7-\delta}$ , 309
- Elastic constants
  - thin film characterization using generalized Lamb waves and harmonic generation, 438
  - elastic constants of some intermetallic compounds as determined by the rectangular parallelepiped resonance method, 585
- Elasticity
  - an elasticity study of Al and Ag nanometre films, 446
  - anelastic and elastic properties of a synthetic monocrystal of bismuth germanate  $Bi_4Ge_3O_{12}$  at low temperatures, 640
- Elastic modulus
  - mechanical loss and elastic modulus associated with phase transitions of barium titanate ceramics, 352
- Elastic properties
  - non-linear elastic properties of CuZnAl alloys near martensitic transformation, 190
  - reorientation of diatomic H-Y complexes in dilute Pd-Y alloys, 222
  - effect of passing electric current on the elastic property of amorphous alloys, 340
  - elastic and dissipative properties of metals with an ultra-fine grain structure, 475
  - measurement applications of the scanning acoustic microscope, 613
- Electrical resistivity
  - the influence of ageing on the reversible martensitic transformation in Cu-Zn-Al alloys, 201
- Electrodynamic balance
  - measurement of stress relaxation strength in engineering materials for high precision mechanical applications, 596
- Electron beam welds
  - varying ultrasonic attenuation in welds with nickel filler metal, 628
- Electron-phonon interaction
  - unusual elastic behaviour of normal state  $UPt_3$ , 464
- Engineering materials
  - measurement of stress relaxation strength in engineering materials for high precision mechanical applications, 596
- Epoxy-diaminodiphenylmethane
  - a study of the internal friction and modulus of epoxy-resin-dispersed nanometre-sized alumina particles, 390
- Experimental techniques
  - low cost vibrating reed mechanical spectrometer using capacitive current detection, 600
- Fabrication parameters
  - relation between fabrication parameters and grain boundary internal friction peaks in commercial Al-Mg-Si alloys, 484
- Fatigue
  - variation in internal friction and ultrasonic attenuation in aluminium during the early stage of fatigue loading, 93
- F.c.c. metals
  - the problem of kink pair formation in f.c.c. metals, 111
- Fe-Cr hidamets
  - internal friction and modulus defect in  $\alpha$ -Fe-based, high-alloyed (Cr, Mo) hidamets, 147
- Ferrimagnetism
  - the ultrasonic behaviour of ferrimagnetic yttrium iron garnet (YIG) crystal under pressure, 557
- Ferrites
  - spin-phonon coupling in MnZn ferrites, 554
- Ferroelasticity
  - elastic aftereffect study of the ferroelastic tetragonal-orthorhombic phase transition in  $YBa_2Cu_3O_x$ , 264
- Ferroelectricity
  - piezoelectric effect and ultrasonic attenuation near  $T_c$  in single-crystal  $YBa_2Cu_3O_{7-x}$  superconductors, 318
- Ferroelectric phase transitions
  - investigations of the elastic behaviour in the vicinity of ferroelectric phase transitions, 185
- Ferroelectrics
  - mechanical and dielectric loss related to ferroelectric and relaxor phase transitions and domain walls, 356
  - ultrasonic dispersion in the phase transition region of ferroelectric materials, 369
- Flux flow
  - mechanical damping effects by flux lines in  $YBa_2Cu_3O_{6.9}$  thin films, 305
- Foils
  - the relaxation strength and the relaxation time of anelasticity experiments on foils or thin plates, 539
- Force
  - amplitude-dependent internal friction and plasticity of crystals, 83
- Forced-torsion pendulum
  - a new kind of electrostatically driven forced-torsion pendulum, 616
- "Forest" dislocations
  - magnetoplastic effect in non-magnetic crystals and internal friction, 548
- Fossil hydrocarbons
  - jet: physical and material aspects, 385
- Fractional relaxation
  - fractional relaxation in anelastic solids, 534

- Fracture processes
  - acoustic emission and self-organized criticality associated with fracture processes during hydrogen precipitation in niobium, 544
- Free nitrogen determination
  - internal friction in pure iron nitrogenated by different methods, 50
- Frequency-independent
  - the temperature-independent component of the diaelastic effect, 503
- Gamma irradiation
  - the effect of neutron and  $\gamma$  irradiation on YBCO and B(Pb)SCCO high- $T_C$  superconductors, 300
- Gases in metals
  - anelastic relaxation due to O-H pairs in Nb-Zr alloys, 226
- Giant magnetostriction
  - preparation and characterization of (Tb,Dy)Fe<sub>2</sub> giant magnetostrictive thin films for surface acoustic wave devices, 455
  - giant magnetostrictive materials: thin film formation and application to magnetic surface acoustic wave devices, 576
- Glasses
  - internal friction and sound velocity of polycrystalline metals at very low temperatures, 27
  - internal friction in Bi-Sr-Ca-Cu-O glasses, 287
  - correlation between mechanical and electrical losses in transition metal oxide glasses, 344
- Glass modifiers
  - correlation between mechanical and electrical losses in transition metal oxide glasses, 344
- Glass transition
  - dynamical mechanical analysis of glass-transition peaks in polymers and composites, 381
- Gold
  - anelasticity of ultrafine-grained polycrystalline gold, 494
- Grain boundaries
  - mechanical spectroscopy with hydrogen in intermetallic phases, 216
  - anelasticity of ultrafine-grained polycrystalline gold, 494
  - the study of internal friction in metal-metal layered materials, 498
- Grain boundary internal friction peak
  - development of the torsion pendulum and early research on grain boundary relaxation and the cold-work internal friction peak, 7
- Grain boundary relaxation
  - grain boundary sliding in thin substrate-bonded Al films, 424
  - relation between fabrication parameters and grain boundary internal friction peaks in commercial Al-Mg-Si alloys, 484
- Grain boundary sliding
  - anelastic relaxation associated with the intergranular phase in silicon nitride and zirconia ceramics, 365
  - grain boundary sliding in thin substrate-bonded Al films, 424
- Grain boundary structure
  - development of the torsion pendulum and early research on grain boundary relaxation and the cold-work internal friction peak, 7
- Grain size
  - the relation between internal friction and tensile creep deformation on alumina ceramics, 361
- Harmonic generation
  - nonlinear damping and harmonic generation in iron, 104
- Heavy fermions
  - unusual elastic behaviour of normal state UPt<sub>3</sub>, 464
- High damping alloys
  - an approach to higher damping capacity: a comparison of material damping with computer-controlled damping, 589
- High temperature background damping
  - high temperature background damping, 518
- High-temperature relaxation
  - high-temperature internal friction in aluminium studied by isothermal mechanical spectrometry, 144
- High temperatures
  - influence of a changing microstructure on high temperature relaxation peaks, an example: WC-11wt.%Co, 397
- High-temperature superconductors
  - acoustic absorption in high-temperature superconductors due to pseudo-Jahn-Teller centres, 292
- Hydrogen
  - anelastic relaxation of H trapped by Zr in Nb single crystals, 80
  - reorientation of diatomic H-Y complexes in dilute Pd-Y alloys, 222
  - hydrogen-induced internal friction in NiZr<sub>2</sub>, 229
  - hydrogen internal friction peak and thermal desorption spectrum in amorphous Cu<sub>60</sub>Zr<sub>40</sub>, 237
  - the influence of hydrogen and dislocations on the internal friction in yttrium, 249
- Hydrogen diffusion
  - stress-induced reorientation of oxygen-hydrogen complexes in a Ta<sub>75</sub>Nb<sub>25</sub> alloy, 62
- Hydrogen in metals
  - features of elastic energy dissipation in the Pd-Ag-H system, 233
- Hydrogen precipitation
  - acoustic emission and self-organized criticality associated with fracture processes during hydrogen precipitation in niobium, 544
- Hydrogen relaxation peak
  - thermal activation parameters and the annealing process of the hydrogen relaxation peak in an austenitic stainless steel, 241
- Hydrogen solubility
  - measurement of hydrogen solubility during isothermal charging in a Zr alloy using an internal friction technique, 245
- Hydrogen tunnelling
  - tunnelling of H trapped by substitutional Zr in Nb: an investigation on its geometry, 253
- Hysteretic damping
  - recent applications of high-damping hysteretic devices for the seismic isolation of buildings and bridges, 592
- Hysteretic loop
  - amplitude-dependent internal friction and dislocation inelastic strain in zinc and aluminium single crystals, 164
- Inhomogeneous deformation
  - dislocation-like relaxations in cold deformed metallic glasses, 114
- Intergranular phase
  - anelastic relaxation associated with the intergranular phase in silicon nitride and zirconia ceramics, 365

## Intermediate frequencies

early work on dislocations and point defects at low and intermediate frequencies, 4

## Intermetallic compounds

mechanical spectroscopy with hydrogen in intermetallic phases, 216

elastic constants of some intermetallic compounds as determined by the rectangular parallelepiped resonance method, 585

## Internal friction

$Q^{-1}$  spectra connected with C under solute atom interaction, 33

anelastic behaviour in Nb–Ti alloys containing interstitial elements, 37

analysis of the Snoek relaxation in niobium–oxygen with low interstitial content, 41

interaction of dissolved atoms and “hydrogen Snoek-type relaxation” in Nb and Ta (computer simulation), 45

internal friction in pure iron nitrogenated by different methods, 50

temperature dependence of the internal friction and modulus change in  $Y_2O_3$ - and  $M_2O$ -doped  $ZrO_2$  polycrystals, 58

internal friction and substitutional–interstitial interaction in niobium-based alloys, 75

amplitude-dependent internal friction and plasticity of crystals, 83

variation in internal friction and ultrasonic attenuation in aluminium during the early stage of fatigue loading, 93

internal friction due to twinning dislocations in Cu–Ge solid solution alloys, 107

dislocation-like relaxations in cold deformed metallic glasses, 114

internal friction associated with grain boundaries in Ni–Cr alloys, 118

low-temperature mechanical loss measurements of 5N and 6N lead, 128

sensitivity to dynamic strain aging in C–Mn steels, 132

internal friction and modulus defect in  $\alpha$ -Fe-based, high-alloyed (Cr, Mo) hidamets, 147

amplitude-dependent internal friction and dislocation inelastic strain in zinc and aluminium single crystals, 164

amplitude-dependent internal friction in dilute copper–aluminium alloys with three kinds of peaks, 173

the similarity law between the temperature dependences of yield stress and microyield stress evaluated from internal friction, 177

the influence of chemical composition and thermal treatments on the temperature-dependent internal friction of Fe–Ni alloys in the range of the phase transformation, 194

studies on pre-bainitic transformation in Cu–Zn–Al–Mn alloy, 198

the influence of ageing on the reversible martensitic transformation in Cu–Zn–Al alloys, 201

internal friction of Fe–Mn–Si–Cr shape-memory alloy, 208

internal friction in Fe–Mn–Cr–Si–Ni shape memory alloys, 212

anelastic relaxation due to O–H pairs in Nb–Zr alloys, 226

measurement of hydrogen solubility during isothermal charging in a Zr alloy using an internal friction technique, 245

the influence of hydrogen and dislocations on the internal friction in yttrium, 249

low temperature torsion pendulum measurements on YBCO superconductors, 276

internal friction in Bi–Sr–Ca–Cu–O glasses, 287

oxygen mobility in  $YBa_2Cu_3O_{7-\delta}$ , 296

correlation between mechanical and electrical losses in transition metal oxide glasses, 344

mechanical and dielectric loss related to ferroelectric and relaxor phase transitions and domain walls, 356

the relation between internal friction and tensile creep deformation on alumina ceramics, 361

internal friction in ceria ceramics doped with alkali earth metal oxides, 374

internal friction study of transformation dynamics in  $BaTiO_3$  ceramics, 378

dynamical mechanical analysis of glass-transition peaks in polymers and composites, 381

jet: physical and material aspects, 385

a study of the internal friction and modulus of epoxy-resin-dispersed nanometre-sized alumina particles, 390

AlCu– $Al_2O_3$  metal matrix composites studied by mechanical spectroscopy, 402

internal friction in thin films and membranes, 428

internal friction and elastic moduli of V and Cr films on Si substrates, 434

non-linear mechanical relaxation associated with the viscous sliding of grain boundaries in aluminium bicrystals, 480

internal friction, thermal and structural analysis of nanocrystalline aluminium, 489

anelasticity of ultrafine-grained polycrystalline gold, 494

the study of internal friction in metal–metal layered materials, 498

magnetoplastic effect in non-magnetic crystals and internal friction, 548

influence of magnetic fields on the internal friction of Ni, 563

a new kind of electrostatically driven forced-torsion pendulum, 616

measurement of internal friction in polycrystalline materials using laser-generated ultrasound, 636

## Internal friction amplitude

amplitude-domain mechanical spectroscopy: a way to systematic analysis, 603

## Interstitial elements

anelastic behaviour in Nb–Ti alloys containing interstitial elements, 37

## Interstitial interaction

internal friction and substitutional–interstitial interaction in niobium-based alloys, 75

## Interstitial nitrogen

N ageing in aluminized steel sheet: an industrial application of high frequency internal friction measurements to point defect–interface interactions, 619

## Interstitial solid solution

interaction of dissolved atoms and “hydrogen Snoek-type relaxation” in Nb and Ta (computer simulation), 45

## Ion beam sputtering

preparation and characterization of (Tb,Dy)Fe<sub>2</sub> giant magnetostrictive thin films for surface acoustic wave devices, 455

## Iron

internal friction in pure iron nitrogenated by different methods, 50

nonlinear damping and harmonic generation in iron, 104

the influence of chemical composition and thermal treatments on the temperature-dependent internal friction of

- Fe–Ni alloys in the range of the phase transformation, 194
- internal friction in Fe–Mn–Cr–Si–Ni shape memory alloys, 212
- preparation and characterization of (Tb,Dy)Fe<sub>2</sub> giant magnetostrictive thin films for surface acoustic wave devices, 455
- giant magnetostrictive materials: thin film formation and application to magnetic surface acoustic wave devices, 576
- surface acoustic waves on thin films of giant magnetostrictive alloys, 581
- Iron phosphate
  - correlation between mechanical and electrical losses in transition metal oxide glasses, 344
- Kink chain
  - the power spectrum associated with a kink chain oscillating in a non-stokesian atmosphere of paraelastic interstitials, 140
- Kink pairs
  - the problem of kink pair formation in f.c.c. metals, 111
- Kondo effect
  - unusual elastic behaviour of normal state UPT<sub>3</sub>, 464
- Lead
  - recent applications of high-damping hysteretic devices for the seismic isolation of buildings and bridges, 592
- Lead zirconate titanate
  - loss mechanisms in fine-grained ferroelectric ceramic thin films for ULSI memories (DRAMs), 451
- Linear viscoelasticity
  - relaxation strength and distribution function of an internal friction peak, 529
- Low energy excitations
  - low energy excitations in amorphous materials: acoustic experiments and comparison with theoretical models, 321
- Low frequencies
  - early work on dislocations and point defects at low and intermediate frequencies, 4
- Low temperature properties of solids
  - internal friction and sound velocity of polycrystalline metals at very low temperatures, 27
- Low temperatures
  - relative variation in the sound velocity in polymethyl methacrylate at intermediate low temperatures, 337
  - anelastic and elastic properties of a synthetic monocrystal of bismuth germanate Bi<sub>4</sub>Ge<sub>3</sub>O<sub>12</sub> at low temperatures, 640
- Lubrication process
  - low-temperature mechanical loss measurements of 5N and 6N lead, 128
- Magnetic field orientation
  - dependence of dissipation on magnetic field orientation in high T<sub>c</sub> superconductor ceramics, 279
- Magnetic fields
  - influence of magnetic fields on the internal friction of Ni, 563
- Magnetic properties
  - evolution of magnetomechanical damping and magnetic properties of pure iron siliconized up to 5.5 wt.% by chemical vapour deposition, 568
- Magnetization
  - “Giant”  $\Delta E$  effect in amorphous alloys with perpendicular magnetic anisotropy, 560
- Magnetoelastic interaction
  - ultrasonic investigation of Nd<sub>2</sub>Cu<sub>1-x</sub>Zn<sub>x</sub>O<sub>4</sub>: magnetoelastic interaction in the antiferromagnetic and paramagnetic state, 572
- Magnetomechanical damping
  - evolution of magnetomechanical damping and magnetic properties of pure iron siliconized up to 5.5 wt.% by chemical vapour deposition, 568
- Magnetoplastic effects
  - magnetoplastic effect in non-magnetic crystals and internal friction, 548
- Magnetostriction
  - surface acoustic waves on thin films of giant magnetostrictive alloys, 581
- Manganese
  - internal friction in Fe–Mn–Cr–Si–Ni shape memory alloys, 212
  - spin-phonon coupling in MnZn ferrites, 554
- Martensite
  - austenitic–martensitic interface damping measured in shape memory alloys by a cyclic tensile machine, 632
- Martensitic transformation
  - Q<sup>-1</sup> spectra connected with C under solute atom interaction, 33
  - non-linear elastic properties of CuZnAl alloys near martensitic transformation, 190
  - the influence of chemical composition and thermal treatments on the temperature-dependent internal friction of Fe–Ni alloys in the range of the phase transformation, 194
- Martensitic transformations
  - martensitic transformation in Ni<sub>50</sub>Ti<sub>50</sub> films, 460
- Material damping
  - an approach to higher damping capacity: a comparison of material damping with computer-controlled damping, 589
- Measurement
  - measurement of stress relaxation strength in engineering materials for high precision mechanical applications, 596
- Measurement applications
  - measurement applications of the scanning acoustic microscope, 613
- Mechanical hydrogen spectroscopy
  - mechanical spectroscopy with hydrogen in intermetallic phases, 216
- Mechanical loss
  - mechanical loss measurements on yttria- and calcia-stabilized zirconia, 66
  - mechanical loss studies of O–O interactions in Ta, 71
  - mechanical loss and elastic modulus associated with phase transitions of barium titanate ceramics, 352
- Mechanical measurements
  - anelasticity and viscosity of superionic conducting glasses, 333
- Mechanical properties
  - varying ultrasonic attenuation in welds with nickel filler metal, 628
- Mechanical relaxation
  - anelastic relaxation due to O–H pairs in Nb–Zr alloys, 226

- Mechanical spectrometry**  
 high-temperature internal friction in aluminium studied by isothermal mechanical spectrometry, 144
- Mechanical spectroscopy**  
 study by mechanical spectroscopy of the dislocation substructure in an aluminium matrix composite reinforced by alumina fibres, 393  
 low cost vibrating reed mechanical spectrometer using capacitive current detection, 600  
 amplitude-domain mechanical spectroscopy: a way to systematic analysis, 603
- Membranes**  
 internal friction in thin films and membranes, 428
- Memories**  
 loss mechanisms in fine-grained ferroelectric ceramic thin films for ULSI memories (DRAMs), 451
- Mercury diiodide**  
 photoacoustic properties of HgI<sub>2</sub> single crystals at different levels of ultrasound strain amplitude, 160
- Metallic glasses**  
 dislocation-like relaxations in cold deformed metallic glasses, 114
- Metallic layer**  
 the study of internal friction in metal-metal layered materials, 498
- Metal matrix composites**  
 AlCu–Al<sub>2</sub>O<sub>3</sub> metal matrix composites studied by mechanical spectroscopy, 402  
 modelling and numerical computation of transient internal damping due to thermal expansion mismatch between matrix and particles in metal matrix composites, 406  
 transient internal damping in aluminium-based metal matrix composites, 410
- Microdeformation**  
 numerical simulation of anelastic behaviour and microdeformation due to dislocations, 155
- Microstructure**  
 sensitivity to dynamic strain aging in C–Mn steels, 132
- Migration mechanism**  
 migration mechanism of self-interstitial atoms in Mo after low temperature irradiation. I. Relaxation peak, 54  
 migration mechanism of self-interstitial atoms in Mo after low temperature irradiation. II. Dislocation pinning, 136
- Modelling**  
 modelling and numerical computation of transient internal damping due to thermal expansion mismatch between matrix and particles in metal matrix composites, 406
- Modified anelastic element**  
 relaxation strength and distribution function of an internal friction peak, 529
- Modulus amplitude**  
 amplitude-domain mechanical spectroscopy: a way to systematic analysis, 603
- Modulus effect**  
 anelasticity of ultrafine-grained polycrystalline gold, 494
- Molecular dynamics**  
 computer simulation on phonon transport in crystals with defects, 471
- Molybdenum**  
 migration mechanism of self-interstitial atoms in Mo after low temperature irradiation. I. Relaxation peak, 54  
 migration mechanism of self-interstitial atoms in Mo after low temperature irradiation. II. Dislocation pinning, 136
- Monte–Carlo simulations**  
 Q<sup>-1</sup> spectra connected with C under solute atom interaction, 33  
 interaction of dissolved atoms and “hydrogen Snoek-type relaxation” in Nb and Ta (computer simulation), 45
- Moving coil twisting device**  
 development of the torsion pendulum and early research on grain boundary relaxation and the cold-work internal friction peak, 7
- Nanocrystalline aluminium**  
 internal friction, thermal and structural analysis of nanocrystalline aluminium, 489
- Nanocrystals**  
 anelasticity of ultrafine-grained polycrystalline gold, 494
- Nb–Ti alloys**  
 anelastic behaviour in Nb–Ti alloys containing interstitial elements, 37
- Neutron irradiation**  
 the effect of neutron and  $\gamma$  irradiation on YBCO and B(Pb)SCCO high- $T_C$  superconductors, 300
- Nickel**  
 the influence of chemical composition and thermal treatments on the temperature-dependent internal friction of Fe–Ni alloys in the range of the phase transformation, 194  
 internal friction in Fe–Mn–Cr–Si–Ni shape memory alloys, 212  
 hydrogen-induced internal friction in NiZr<sub>2</sub>, 229  
 martensitic transformation in Ni<sub>50</sub>Ti<sub>50</sub> films, 460  
 influence of magnetic fields on the internal friction of Ni, 563
- Nickel filler metal**  
 varying ultrasonic attenuation in welds with nickel filler metal, 628
- Ni–Cr alloys**  
 internal friction associated with grain boundaries in Ni–Cr alloys, 118
- Nimonic**  
 stress relaxation in precipitation-hardenable alloys, 509
- Niobium**  
 analysis of the Snoek relaxation in niobium–oxygen with low interstitial content, 41  
 internal friction and substitutional–interstitial interaction in niobium-based alloys, 75  
 anelastic relaxation of H trapped by Zr in Nb single crystals, 80  
 study of non-linear effects related to the Snoek–Köster relaxation in Nb, 181  
 tunnelling of H trapped by substitutional Zr in Nb: an investigation on its geometry, 253  
 analysis of the Snoek relaxation in Nb–O alloys through the loss tangent distribution function, 525  
 acoustic emission and self-organized criticality associated with fracture processes during hydrogen precipitation in niobium, 544
- Non-linear anelasticity**  
 development of the torsion pendulum and early research on grain boundary relaxation and the cold-work internal friction peak, 7
- Nonlinear damping**  
 nonlinear damping and harmonic generation in iron, 104
- Non-linear effects**  
 study of non-linear effects related to the Snoek–Köster relaxation in Nb, 181
- Non-linear grain boundary relaxation**  
 non-linear mechanical relaxation associated with the viscous sliding of grain boundaries in aluminium bicrystals, 480



- Nonlinear mechanical relaxation  
 nonlinear mechanical relaxation associated with dislocation–point defect interaction, 90
- Non-magnetic crystals  
 magnetoplastic effect in non-magnetic crystals and internal friction, 548
- Numerical simulation  
 numerical simulation of anelastic behaviour and micro-deformation due to dislocations, 155
- Oxidation  
 internal friction and elastic moduli of V and Cr films on Si substrates, 434
- Oxides  
 internal friction in ceria ceramics doped with alkali earth metal oxides, 374
- Oxygen  
 analysis of the Snoek relaxation in niobium–oxygen with low interstitial content, 41  
 mechanical loss studies of O–O interactions in Ta, 71
- Oxygen anelastic relaxation  
 stoichiometry dependence of oxygen anelastic relaxation in  $\text{YBa}_2\text{Cu}_3\text{O}_{7-x}$  and the orthorhombic-to-tetragonal phase transition, 314
- Oxygen diffusion  
 oxygen diffusion and reordering in  $\text{RBa}_2\text{Cu}_3\text{O}_{6+x}$ , 257
- Oxygen relaxation  
 oxygen mobility in  $\text{YBa}_2\text{Cu}_3\text{O}_{7-\delta}$ , 296
- Palladium  
 reorientation of diatomic H–Y complexes in dilute Pd–Y alloys, 222
- Paraelastic interstitials  
 the power spectrum associated with a kink chain oscillating in a non-stokesian atmosphere of paraelastic interstitials, 140
- Paramagnetic state  
 ultrasonic investigation of  $\text{Nd}_2\text{Cu}_{1-x}\text{Zn}_x\text{O}_4$ : magnetoelastic interaction in the antiferromagnetic and paramagnetic state, 572
- Passing electric current  
 effect of passing electric current on the elastic property of amorphous alloys, 340
- Pd–Ag alloys  
 features of elastic energy dissipation in the Pd–Ag–H system, 233
- Peierls stress  
 the problem of kink pair formation in f.c.c. metals, 111
- Phase transformations  
 effects of thermal and thermomechanical cycling on the phase transformations in NiTi and Ni–Ti–Co shape-memory alloys, 204  
 oxygen diffusion and reordering in  $\text{RBa}_2\text{Cu}_3\text{O}_{6+x}$ , 257
- Phase transitions  
 ultrasonic anomalies and phase transitions in the  $\text{Y}_1\text{Ba}_2\text{Cu}_4\text{O}_8$  and the  $\text{Y}_{1-x}\text{Ca}_x\text{Ba}_2\text{Cu}_4\text{O}_8$  systems, 260  
 elastic aftereffect study of the ferroelastic tetragonal–orthorhombic phase transition in  $\text{YBa}_2\text{Cu}_3\text{O}_x$ , 264  
 stoichiometry dependence of oxygen anelastic relaxation in  $\text{YBa}_2\text{Cu}_3\text{O}_{7-x}$  and the orthorhombic-to-tetragonal phase transition, 314  
 mechanical loss and elastic modulus associated with phase transitions of barium titanate ceramics, 352  
 mechanical and dielectric loss related to ferroelectric and relaxor phase transitions and domain walls, 356  
 ultrasonic dispersion in the phase transition region of ferroelectric materials, 369
- Phonon transport  
 computer simulation on phonon transport in crystals with defects, 471
- Photoacoustic effect  
 photoacoustic properties of  $\text{HgI}_2$  single crystals at different levels of ultrasound strain amplitude, 160
- Piezoelectric effect  
 piezoelectric effect and ultrasonic attenuation near  $T_c$  in single-crystal  $\text{YBa}_2\text{Cu}_3\text{O}_{7-x}$  superconductors, 318
- Plastic deformation  
 the similarity law between the temperature dependences of yield stress and microyield stress evaluated from internal friction, 177  
 recent applications of high-damping hysteretic devices for the seismic isolation of buildings and bridges, 592
- Plasticity  
 amplitude-dependent internal friction and plasticity of crystals, 83
- Point defects  
 early work on dislocations and point defects at low and intermediate frequencies, 4
- Polycrystalline materials  
 measurement of internal friction in polycrystalline materials using laser-generated ultrasound, 636
- Polycrystals  
 temperature dependence of the internal friction and modulus change in  $\text{Y}_2\text{O}_3$ - and  $\text{M}_g\text{O}$ -doped  $\text{ZrO}_2$  polycrystals, 58
- Polymeric glasses  
 relative variation in the sound velocity in polymethyl methacrylate at intermediate low temperatures, 337
- Polymers  
 dynamical mechanical analysis of glass-transition peaks in polymers and composites, 381
- Power spectrum  
 the power spectrum associated with a kink chain oscillating in a non-stokesian atmosphere of paraelastic interstitials, 140
- Praseodymium  
 low temperature mechanical energy dissipation phenomena in praseodymium-doped yttrium superconductors, 270
- Precipitation  
 AlCu–Al<sub>2</sub>O<sub>3</sub> metal matrix composites studied by mechanical spectroscopy, 402
- Pressure  
 the ultrasonic behaviour of ferrimagnetic yttrium iron garnet (YIG) crystal under pressure, 557
- Quartz  
 ultrasonic attenuation in  $\alpha$ -quartz as a result of E' defect centres, 349
- Radiation  
 ultrasonic attenuation in  $\alpha$ -quartz as a result of E' defect centres, 349
- Rare earths  
 preparation and characterization of (Tb,Dy)Fe<sub>2</sub> giant magnetostrictive thin films for surface acoustic wave devices, 455  
 giant magnetostrictive materials: thin film formation and application to magnetic surface acoustic wave devices, 576  
 surface acoustic waves on thin films of giant magnetostrictive alloys, 581

- Reclaimed polymers  
 identification and characterization of reclaimed and recycled polymers by ultrasound attenuation, 419
- Recovery  
 thermally activated recovery of polycrystalline cadmium deformed by anisotropic thermal expansion, 96
- Rectangular parallelepiped resonance  
 elastic constants of some intermetallic compounds as determined by the rectangular parallelepiped resonance method, 585
- Recycled polymers  
 identification and characterization of reclaimed and recycled polymers by ultrasound attenuation, 419
- Relaxation  
 theoretical basis and general applicability of the coupling model to relaxations in coupled systems, 327  
 ultrasonic attenuation in  $\alpha$ -quartz as a result of E' defect centres, 349
- Relaxation dynamics  
 self-organized criticality and dislocation damping, 124
- Relaxation peak intensity  
 migration mechanism of self-interstitial atoms in Mo after low temperature irradiation. I. Relaxation peak, 54
- Relaxation strength  
 zener relaxation strength in b.c.c. and f.c.c. alloys, 522  
 relaxation strength and distribution function of an internal friction peak, 529  
 the relaxation strength and the relaxation time of anelasticity experiments on foils or thin plates, 539
- Reordering  
 oxygen diffusion and reordering in  $\text{RBa}_2\text{Cu}_3\text{O}_{6+x}$ , 257
- Reorientation  
 stress-induced reorientation of oxygen-hydrogen complexes in a  $\text{Ta}_{75}\text{Nb}_{25}$  alloy, 62
- Reorientation relaxation  
 hydrogen-induced internal friction in  $\text{NiZr}_2$ , 229
- Resonant transducers  
 anelastic properties of resonant transducers for cryogenic gravitational wave antennas, 644
- Reversible martensitic transformation  
 the influence of ageing on the reversible martensitic transformation in Cu-Zn-Al alloys, 201
- Reversible stress relaxation  
 stress relaxation in precipitation-hardenable alloys, 509  
 measurement of stress relaxation strength in engineering materials for high precision mechanical applications, 596
- Scanning acoustic microscope  
 measurement applications of the scanning acoustic microscope, 613
- Scanning acoustic microscopy  
 determination of ultrasonic attenuation in small samples of solid material by scanning acoustic microscopy with phase contrast, 625
- Scanning laser acoustic microscopy  
 varying ultrasonic attenuation in welds with nickel filler metal, 628
- Seeger's model  
 theoretical basis and general applicability of the coupling model to relaxations in coupled systems, 327
- Seismic isolation  
 recent applications of high-damping hysteretic devices for the seismic isolation of buildings and bridges, 592
- Self-interstitial atoms  
 migration mechanism of self-interstitial atoms in Mo after low temperature irradiation. I. Relaxation peak, 54  
 migration mechanism of self-interstitial atoms in Mo after low temperature irradiation. II. Dislocation pinning, 136
- Self-interstitials  
 the temperature-independent component of the diaelastic effect, 503
- Shape-memory alloys  
 internal friction of Fe-Mn-Si-Cr shape-memory alloy, 208  
 internal friction in Fe-Mn-Cr-Si-Ni shape memory alloys, 212  
 austenitic-martensitic interface damping measured in shape memory alloys by a cyclic tensile machine, 632
- Silicon  
 internal friction in Fe-Mn-Cr-Si-Ni shape memory alloys, 212
- Silicon nitride  
 anelastic relaxation associated with the intergranular phase in silicon nitride and zirconia ceramics, 365
- Silver  
 study of the dislocation relaxation peaks in easy glide deformed silver single crystals having different length-to-width ratios, 100  
 an elasticity study of Al and Ag nanometre films, 446
- Single crystals  
 piezoelectric effect and ultrasonic attenuation near  $T_c$  in single-crystal  $\text{YBa}_2\text{Cu}_3\text{O}_{7-x}$  superconductors, 318
- Slip band relaxation  
 development of the torsion pendulum and early research on grain boundary relaxation and the cold-work internal friction peak, 7
- Snoek-Köster relaxation  
 study of non-linear effects related to the Snoek-Köster relaxation in Nb, 181
- Snoek relaxation  
 analysis of the Snoek relaxation in niobium-oxygen with low interstitial content, 41  
 analysis of the Snoek relaxation in Nb-O alloys through the loss tangent distribution function, 525
- Snoek-type relaxation  
 interaction of dissolved atoms and "hydrogen Snoek-type relaxation" in Nb and Ta (computer simulation), 45
- Solute depleted regions  
 studies on pre-bainitic transformation in Cu-Zn-Al-Mn alloy, 198
- Specific heat measurements  
 ultrasonic anomalies and phase transitions in the  $\text{Y}_1\text{Ba}_2\text{Cu}_4\text{O}_8$  and the  $\text{Y}_{1-x}\text{Ca}_x\text{Ba}_2\text{Cu}_4\text{O}_8$  systems, 260
- Spin system  
 spin-phonon coupling in MnZn ferrites, 554
- Stabilization  
 mechanical loss measurements on yttria- and calcia-stabilized zirconia, 66
- Steel  
 recent applications of high-damping hysteretic devices for the seismic isolation of buildings and bridges, 592
- Strain amplitude  
 non-linear mechanical relaxation associated with the viscous sliding of grain boundaries in aluminium bicrystals, 480
- Strain-induced interaction  
 interaction of dissolved atoms and "hydrogen Snoek-type relaxation" in Nb and Ta (computer simulation), 45

- Substitution  
 internal friction and substitutional–interstitial interaction in niobium-based alloys, 75
- Superconducting materials  
 analysis of the oxygen relaxation spectrum in  $\text{YBa}_2\text{Cu}_3\text{O}_{6+x}$  at high temperature, 283
- Superconductivity  
 elastic consequences of the dielectric behavior of  $\text{YBa}_2\text{Cu}_3\text{O}_{7-\delta}$ , 309
- Superconductors  
 low temperature torsion pendulum measurements on YBCO superconductors, 276  
 oxygen mobility in  $\text{YBa}_2\text{Cu}_3\text{O}_{7-\delta}$ , 296  
 the effect of neutron and  $\gamma$  irradiation on YBCO and B(Pb)SCCO high- $T_C$  superconductors, 300  
 piezoelectric effect and ultrasonic attenuation near  $T_c$  in single-crystal  $\text{YBa}_2\text{Cu}_3\text{O}_{7-x}$  superconductors, 318
- Superionic conductors  
 anelasticity and viscosity of superionic conducting glasses, 333
- Supermodulus effects  
 the anelastic study of Ag/Pd multilayers, 442
- Surface acoustic wave  
 giant magnetostrictive materials: thin film formation and application to magnetic surface acoustic wave devices, 576
- Surface wave  
 thin film characterization using generalized Lamb waves and harmonic generation, 438
- TaNb alloys  
 stress-induced reorientation of oxygen–hydrogen complexes in a  $\text{Ta}_{75}\text{Nb}_{25}$  alloy, 62
- Tantalum  
 mechanical loss studies of O–O interactions in Ta, 71
- Temperature cycling  
 non-linear elastic properties of CuZnAl alloys near martensitic transformation, 190
- Temperature dependence  
 temperature dependence of the internal friction and modulus change in  $\text{Y}_2\text{O}_3$ - and  $\text{M}_g\text{O}$ -doped  $\text{ZrO}_2$  polycrystals, 58  
 the similarity law between the temperature dependences of yield stress and microyield stress evaluated from internal friction, 177  
 acoustic absorption in high-temperature superconductors due to pseudo-Jahn–Teller centres, 292  
 elastic consequences of the dielectric behavior of  $\text{YBa}_2\text{Cu}_3\text{O}_{7-\delta}$ , 309
- Temperature-independent  
 the temperature-independent component of the diaelastic effect, 503
- Thermal activation  
 thermal activation parameters and the annealing process of the hydrogen relaxation peak in an austenitic stainless steel, 241
- Thermal analysis  
 internal friction, thermal and structural analysis of nanocrystalline aluminium, 489
- Thermal cycling  
 low-temperature thermal cycling of metal-matrix composites studied by the ultrasonic low-frequency stress-coupling technique, 169  
 effects of thermal and thermomechanical cycling on the phase transformations in NiTi and Ni–Ti–Co shape-memory alloys, 204
- Thermal desorption  
 hydrogen internal friction peak and thermal desorption spectrum in amorphous  $\text{Cu}_{60}\text{Zr}_{40}$ , 237
- Thermal diffusivity  
 computer simulation on phonon transport in crystals with defects, 471
- Thermal expansion  
 low-temperature thermal cycling of metal-matrix composites studied by the ultrasonic low-frequency stress-coupling technique, 169  
 modelling and numerical computation of transient internal damping due to thermal expansion mismatch between matrix and particles in metal matrix composites, 406
- Thermal hystereses  
 ultrasonic anomalies and phase transitions in the  $\text{Y}_1\text{Ba}_2\text{Cu}_4\text{O}_8$  and the  $\text{Y}_{1-x}\text{Ca}_x\text{Ba}_2\text{Cu}_4\text{O}_8$  systems, 260
- Thermally activated processes  
 oxygen diffusion and reordering in  $\text{RBa}_2\text{Cu}_3\text{O}_{6+x}$ , 257
- Thermoelastic coupling  
 fractional relaxation in anelastic solids, 534
- Thermofluctuation mechanisms  
 amplitude-dependent internal friction and plasticity of crystals, 83
- Thermomechanical cycling  
 effects of thermal and thermomechanical cycling on the phase transformations in NiTi and Ni–Ti–Co shape-memory alloys, 204
- Thin films  
 mechanical damping effects by flux lines in  $\text{YBa}_2\text{Cu}_3\text{O}_{6,9}$  thin films, 305  
 grain boundary sliding in thin substrate-bonded Al films, 424  
 internal friction in thin films and membranes, 428  
 internal friction and elastic moduli of V and Cr films on Si substrates, 434  
 thin film characterization using generalized Lamb waves and harmonic generation, 438  
 loss mechanisms in fine-grained ferroelectric ceramic thin films for ULSI memories (DRAMs), 451  
 preparation and characterization of (Tb,Dy)Fe<sub>2</sub> giant magnetostrictive thin films for surface acoustic wave devices, 455  
 giant magnetostrictive materials: thin film formation and application to magnetic surface acoustic wave devices, 576
- Thin films: Surface acoustic wave  
 surface acoustic waves on thin films of giant magnetostrictive alloys, 581
- Thin plates  
 the relaxation strength and the relaxation time of anelasticity experiments on foils or thin plates, 539
- Titanium  
 martensitic transformation in  $\text{Ni}_{50}\text{Ti}_{50}$  films, 460
- Torsion pendulum  
 development of the torsion pendulum and early research on grain boundary relaxation and the cold-work internal friction peak, 7
- Transformation dynamics  
 internal friction study of transformation dynamics in  $\text{BaTiO}_3$  ceramics, 378
- Tunnelling  
 low energy excitations in amorphous materials: acoustic experiments and comparison with theoretical models, 321

- Twinning dislocation**  
internal friction due to twinning dislocations in Cu–Ge solid solution alloys, 107
- Ultrasonic attenuation**  
variation in internal friction and ultrasonic attenuation in aluminium during the early stage of fatigue loading, 93  
dislocation damping and associated modulus defect in copper crystals, 152  
ultrasonic dispersion in the phase transition region of ferroelectric materials, 369  
determination of ultrasonic attenuation in small samples of solid material by scanning acoustic microscopy with phase contrast, 625
- Ultrasonic dispersion**  
ultrasonic dispersion in the phase transition region of ferroelectric materials, 369
- Ultrasonic measurements**  
ultrasonic anomalies and phase transitions in the  $Y_1Ba_2Cu_4O_8$  and the  $Y_{1-x}Ca_xBa_2Cu_4O_8$  systems, 260
- Ultrasonic response**  
the temperature-independent component of the diaelastic effect, 503
- Ultrasonic studies**  
ultrasonic studies of condensed matter in the 1950s and beyond, 20
- Ultrasound**  
measurement of internal friction in polycrystalline materials using laser-generated ultrasound, 636
- Ultrasound attenuation**  
ultrasound attenuation and velocity in  $Bi_2Sr_{2-x}Ca_{1+x}Cu_2O_{8-\delta}$ , 273  
identification and characterization of reclaimed and recycled polymers by ultrasound attenuation, 419
- Ultrasound velocity**  
ultrasound attenuation and velocity in  $Bi_2Sr_{2-x}Ca_{1+x}Cu_2O_{8-\delta}$ , 273
- Vanadium**  
internal friction and elastic moduli of V and Cr films on Si substrates, 434
- Velocity shift**  
relative variation in the sound velocity in polymethyl methacrylate at intermediate low temperatures, 337
- Vibrating reed**  
low cost vibrating reed mechanical spectrometer using capacitive current detection, 600
- Vibrating reed technique**  
low temperature mechanical energy dissipation phenomena in praseodymium-doped yttrium superconductors, 270  
dependence of dissipation on magnetic field orientation in high  $T_c$  superconductor ceramics, 279  
mechanical damping effects by flux lines in  $YBa_2Cu_3O_{6.9}$  thin films, 305  
stoichiometry dependence of oxygen anelastic relaxation in  $YBa_2Cu_3O_{7-x}$  and the orthorhombic-to-tetragonal phase transition, 314
- Vibration frequency**  
a new kind of electrostatically driven forced-torsion pendulum, 616
- Viscosity**  
anelasticity and viscosity of superionic conducting glasses, 333
- X-ray diffraction**  
 $Q^{-1}$  spectra connected with C under solute atom interaction, 33
- Yield stress**  
the similarity law between the temperature dependences of yield stress and microyield stress evaluated from internal friction, 177
- Young's modulus**  
measurement of hydrogen solubility during isothermal charging in a Zr alloy using an internal friction technique, 245
- Yttria**  
mechanical loss measurements on yttria- and calcia-stabilized zirconia, 66
- Yttrium**  
reorientation of diatomic H–Y complexes in dilute Pd–Y alloys, 222  
the influence of hydrogen and dislocations on the internal friction in yttrium, 249
- Yttrium iron garnet**  
the ultrasonic behaviour of ferrimagnetic yttrium iron garnet (YIG) crystal under pressure, 557
- Yttrium superconductors**  
low temperature mechanical energy dissipation phenomena in praseodymium-doped yttrium superconductors, 270
- Zinc**  
amplitude-dependent internal friction and dislocation inelastic strain in zinc and aluminium single crystals, 164  
damping capacity of Zn–Al alloy sheets, 514  
spin-phonon coupling in MnZn ferrites, 554
- Zirconia**  
temperature dependence of the internal friction and modulus change in  $Y_2O_3$ - and  $M_gO$ -doped  $ZrO_2$  polycrystals, 58  
mechanical loss measurements on yttria- and calcia-stabilized zirconia, 66  
anelastic relaxation associated with the intergranular phase in silicon nitride and zirconia ceramics, 365
- Zirconium**  
anelastic relaxation of H trapped by Zr in Nb single crystals, 80  
hydrogen-induced internal friction in  $NiZr_2$ , 229  
tunnelling of H trapped by substitutional Zr in Nb: an investigation on its geometry, 253
- Zirconium alloys**  
measurement of hydrogen solubility during isothermal charging in a Zr alloy using an internal friction technique, 245