

# Subject Index of Volume 190

## Aluminium

- <sup>155</sup>Gd Mössbauer effect and magnetic properties of Al and Ga substituted GdCu<sub>5</sub> and GdNi<sub>5</sub>, 77
- activation characteristics of chemically treated LaNi<sub>4.7</sub>Al<sub>0.3</sub>, 57
- crystal structural refinement of TmAlB<sub>14</sub>, 185
- LaAg<sub>3</sub>Al<sub>2</sub>, CeAg<sub>3</sub>Al<sub>2</sub>, PrAg<sub>3</sub>Al<sub>2</sub>, CaAg<sub>2.2</sub>Al<sub>2.8</sub>, SrAg<sub>2.5</sub>Al<sub>2.5</sub> and UNi<sub>2</sub>Al<sub>3</sub>: compositions with CaCu<sub>5</sub> structure type and CaPd<sub>3</sub>Al<sub>5</sub>, a new compound with CaCu<sub>5</sub>-derived structure type, 201
- NMR, magnetism and Mössbauer effect in icosahedral Al<sub>63</sub>Cu<sub>24.5</sub>Fe<sub>12.5</sub>, 189
- structural, magnetic and magnetostrictive studies on Tb<sub>0.27</sub>Dy<sub>0.73</sub>(Fe<sub>1-x</sub>Al<sub>x</sub>)<sub>2</sub>, 255
- Yb–Cu–Al system, 161

## Antiferromagnetism

- <sup>155</sup>Gd Mössbauer effect and magnetic properties of Gd–Mn<sub>6</sub>Ge<sub>6</sub>, L29

## Barium

- thermochemistry of binary liquid alloys of Cu with Ba and lanthanide metals (Eu, Dy, Yb), 149
- crystal structure of Ba<sub>5</sub>SiO<sub>4</sub>Cl<sub>6</sub>, 61

## Battery applications

- surface and bulk properties of LaNi<sub>5-x</sub>Si<sub>x</sub> alloys for battery application, 17

## Boron

- crystal structural refinement of TmAlB<sub>14</sub>, 185
- H solubility in boron carbide, 87
- magnetic properties of Nd<sub>6</sub>Ga<sub>3-x</sub>B<sub>x</sub>Fe<sub>11</sub> intermetallic compounds, 91
- magnetoresistance and hyperfine fields in Sm<sub>x</sub>Fe<sub>80-x</sub>B<sub>20</sub> amorphous alloys, 35

## Caesium

- IR and Raman spectra of Re cluster structures Rb<sub>4</sub>Re<sub>6</sub>S<sub>13</sub> and Cs<sub>4</sub>Re<sub>6</sub>S<sub>13.5</sub>, 181

## Calcium

- LaAg<sub>3</sub>Al<sub>2</sub>, CeAg<sub>3</sub>Al<sub>2</sub>, PrAg<sub>3</sub>Al<sub>2</sub>, CaAg<sub>2.2</sub>Al<sub>2.8</sub>, SrAg<sub>2.5</sub>Al<sub>2.5</sub> and UNi<sub>2</sub>Al<sub>3</sub>: compositions with CaCu<sub>5</sub> structure type and CaPd<sub>3</sub>Al<sub>5</sub>, a new compound with CaCu<sub>5</sub>-derived structure type, 201

## Carbides

- H solubility in boron carbide, 87

## Catalytic converters

- R.f. plasma spray deposition of La–M–Ox (M≡Co, Mn, Ni) films, investigations of structure, morphology and the catalytic oxidation of CO and C<sub>3</sub>H<sub>8</sub>, 209

## Cerium

- pressure-induced phase transition in α-plutonium, 237
- Chemical vapour deposition
  - non-stoichiometry of titanium nitride plates prepared by CVD, 197

## Chlorine

- crystal structure of Ba<sub>5</sub>SiO<sub>4</sub>Cl<sub>6</sub>, 61

## Cobalt

- R.f. plasma spray deposition of La–M–Ox (M≡Co, Mn, Ni) films, investigations of structure, morphology and catalytic oxidation of CO and C<sub>3</sub>H<sub>8</sub>, 209

## Copper

- a β-CuNdW<sub>2</sub>O<sub>8</sub> and β-LiYbW<sub>2</sub>O<sub>8</sub> related Cu–Bi–O wolframate: CuBiW<sub>2</sub>O<sub>8</sub>, L1
- NMR, magnetism and Mössbauer effect in icosahedral Al<sub>63</sub>Cu<sub>24.5</sub>Fe<sub>12.5</sub>, 189
- residual phases in a bulk YBa<sub>2</sub>Cu<sub>3</sub>O<sub>7-x</sub> superconductor, L13
- Yb–Cu–Al system, 161
- thermochemistry of binary liquid alloys of Cu with Ba and lanthanide metals (Eu, Dy, Yb), 149
- Crystal structure
  - crystal and molecular structures of metal free phthalocyanines, 1,2-dicyanobenzene tetramers, 117, 121

## Deuterium

- Ca<sub>4</sub>Mg<sub>4</sub>Fe<sub>3</sub>H<sub>22</sub>, a new quaternary transition metal hydride containing octahedral [FeH<sub>6</sub>]<sup>4-</sup> complex anions, 65

## Double chromates

- Rubidium lanthanide double chromates, 265

## Electric field gradient

- <sup>155</sup>Gd Mössbauer effect and magnetic properties of Gd–Mn<sub>6</sub>Ge<sub>6</sub>, L29

## EXAFS

- local structure in hydrogenated amorphous LaNi<sub>5.0</sub> films using EXAFS, 273

## Ferromagnetism

- ferromagnetic phases in Pr–Nd–Fe, 69

## Gadolinium

- <sup>155</sup>Gd Mössbauer effect and magnetic properties of Al and Ga substituted GdCu<sub>5</sub> and GdNi<sub>5</sub>, 77
- crystal structure of Ba<sub>5</sub>Mn<sub>4</sub>Gd<sub>6</sub>O<sub>21</sub>, L27

## Gallium

- magnetic properties of Nd<sub>6</sub>Ga<sub>3-x</sub>B<sub>x</sub>Fe<sub>11</sub> intermetallic compounds, 91
- theoretical analysis of metal–metal bond alternation leading to tetrahedral metal M<sub>4</sub> clusters in GaMo<sub>4</sub>S<sub>8</sub>-type compounds, 1

## Hydrides

- Ca<sub>4</sub>Mg<sub>4</sub>Fe<sub>3</sub>H<sub>22</sub>, a new quaternary transition metal hydride containing octahedral [FeH<sub>6</sub>]<sup>4-</sup> complex anions, 65
- frequency-domain hydriding and dehydriding kinetics of LaNi<sub>5</sub>H<sub>x</sub>, 49

## Hydrocarbons

- interstitial carbonation of Sm<sub>2</sub>Fe<sub>17</sub> phase by reaction with hydrocarbons, 41
- tribochemical reduction of metals and non-metals from their oxides, 143

## Hydrogen

- effects of cold isostatic pressures on sintering behaviour of Ni ultrafine powders, 31
- tribochemical reduction of metals and non-metals from their oxides, 143
- NMR study of electronic structure and H motion in the random b.c.c. TaV<sub>7</sub>–H(D) system, 171

- composition and structure of the cubic  $\delta$ -phase in the Mg-Co-H system, L45  
 reaction of Sm with H and Ni-Sm oxides, 99  
 short range ordering of H isotopes in Lu, 25  
 ternary titanates as anode materials for solid oxide fuel cells, 279
- Indium**  
 case study of  $\text{Cu}_{1-x}\text{Li}_x\text{InSe}_2$ , L17
- Intermetallics**  
 thermodynamic properties of  $\text{Re}_2\text{Fe}_{14}\text{B}$  ( $\text{Re} \equiv \text{La, Ce, Y}$ ), L9
- Iron**  
 ferromagnetic phases in Pr-Nd-Fe, 69  
 interstitial carbonation of  $\text{Sm}_2\text{Fe}_{17}$  phase by reaction with hydrocarbons, 41  
 magnetoresistance and hyperfine fields in  $\text{Sm}_x\text{Fe}_{80-x}\text{B}_{20}$  amorphous alloys, 35  
 Mössbauer effect study on magnetic properties of intermetallic compounds ( $\text{Sm}_{1-x}\text{Y}_x$ ) $_2\text{Fe}_{17}\text{N}_y$ , 73  
 N-gas pressure synthesis and neutron diffraction study of  $\text{R}_2\text{Fe}_{17}\text{N}_3$  with  $\text{R} \equiv \text{Ce, Nd}$ , 129  
 NMR, magnetism and Mössbauer effect in icosahedral  $\text{Al}_{63}\text{Cu}_{24.5}\text{Fe}_{12.5}$ , 189  
 structural, magnetic and magnetostrictive studies on  $\text{Tb}_{0.27}\text{Dy}_{0.73}(\text{Fe}_{1-x}\text{Al}_x)_2$ , 255
- Kinetics**  
 frequency-domain hydriding and dehydriding kinetics of  $\text{LaNi}_5\text{H}_x$ , 49  
 interstitial carbonation of  $\text{Sm}_2\text{Fe}_{17}$  phase by reaction with hydrocarbons, 41  
 short range ordering of H isotopes in Lu, 25
- Knight shift**  
 NMR study of electronic structure and H motion in the random b.c.c.  $\text{TaV}_2\text{-H(D)}$  system, 171
- Lanthanides**  
 thermochemistry of binary liquid alloys of Cu with Ba and lanthanide metals (Eu, Dy, Yb), 149
- Lanthanum**  
 activation characteristics of chemically treated  $\text{LaNi}_{4.7}\text{Al}_{0.3}$ , 57  
 frequency-domain hydriding and dehydriding kinetics of  $\text{LaNi}_5\text{H}_x$ , 49  
 electrical conduction behaviour of  $\text{Ba}_{1-x}\text{La}_x\text{Ti}_{1-x}\text{Ni}_x\text{O}_3$  ( $x \leq 0.10$ ) system, 243  
 surface and bulk properties of  $\text{LaNi}_{5-x}\text{Si}_x$  alloys for battery application, 17  
 phase diagram of La-Rh system, 13
- Lithium**  
 preparation and structure of  $\text{Li}_7\text{TaN}_4$ , 113  
 case study of  $\text{Cu}_{1-x}\text{Li}_x\text{InSe}_2$ , L17
- Magnesium**  
 tribochemical reduction of metals and non-metals from their oxides, 143
- Magnetic properties**  
 $^{155}\text{Gd}$  Mössbauer effect and magnetic properties of Al and Ga substituted  $\text{GdCu}_5$  and  $\text{GdNi}_5$ , 77  
 magnetic properties of  $\text{Nd}_6\text{Ga}_{3-x}\text{B}_x\text{Fe}_{11}$  intermetallic compounds, 91  
 Mössbauer effect study on magnetic properties of intermetallic compounds ( $\text{Sm}_{1-x}\text{Y}_x$ ) $_2\text{Fe}_{17}\text{N}_y$ , 73  
 preparation and characterization of K, Rb and ammonium tetrachlorouranate(III) trihydrates, 291
- effect of Co substitution on annealing time of NdFeC ingot magnets, 95
- Magnetism**  
 NMR, magnetism and Mössbauer effect in icosahedral  $\text{Al}_{63}\text{Cu}_{24.5}\text{Fe}_{12.5}$ , 189
- Magnetoresistance**  
 magnetoresistance and hyperfine fields in  $\text{Sm}_x\text{Fe}_{80-x}\text{B}_{20}$  amorphous alloys, 35  
 magnetoresistance in  $\text{ErCo}_2$  and  $\text{HoCo}_2$  single crystals, 83
- Magnetron sputtering**  
 thin film metallization by magnetron sputtering from highly pure Mo targets, 157
- Manganese**  
 r.f. plasma spray deposition of La-M-Ox ( $\text{M} \equiv \text{Co, Mn, Ni}$ ) films, structure, morphology and catalytic oxidation of Co and  $\text{C}_3\text{H}_8$ , 209
- Mischmetal**  
 accumulation of rare-earth metal on the surface of the microencapsulated H storage alloy, L37
- Molybdenum**  
 theoretical analysis of metal-metal bond alternation leading to tetrahedral metal M4 clusters in  $\text{GaMo}_4\text{S}_8$ -type compounds, 1  
 thin film metallization by magnetron sputtering from highly pure Mo targets, 157
- Neodymium**  
 $\beta$ - $\text{CuNdW}_2\text{O}_8$  and  $\beta$ - $\text{LiYbW}_2\text{O}_8$  related Cu-Bi-O wolframate  $\text{CuBiW}_2\text{O}_8$ , L1  
 ferromagnetic phases in Pr-Nd-Fe, 69
- Nickel**  
 activation characteristics of chemically treated  $\text{LaNi}_{4.7}\text{Al}_{0.3}$ , 57  
 frequency-domain hydriding and dehydriding kinetics of  $\text{LaNi}_5\text{H}_x$ , 49  
 r.f. plasma spray deposition of La-M-Ox ( $\text{M} \equiv \text{Co, Mn, Ni}$ ) films, structure, morphology and catalytic oxidation of CO and  $\text{C}_3\text{H}_8$ , 209  
 local structure in hydrogenated amorphous  $\text{LaNi}_{5.0}$  films using EXAFS, 273  
 electrical conduction behaviour of  $\text{Ba}_{1-x}\text{La}_x\text{Ti}_{1-x}\text{Ni}_x\text{O}_3$  ( $x \leq 0.10$ ) system, 243  
 surface and bulk properties of  $\text{LaNi}_{5-x}\text{Si}_x$  alloys for battery application, 17  
 thermodynamic evaluation of Ni-Zn system, 107
- Nitrogen**  
 preparation and structure of  $\text{Li}_7\text{TaN}_4$ , 113  
 Mössbauer effect study on magnetic properties of intermetallic compounds ( $\text{Sm}_{1-x}\text{Y}_x$ ) $_2\text{Fe}_{17}\text{N}_y$ , 73  
 reaction of Sm with H and Ni-Sm oxides, 99
- Nuclear magnetic resonance**  
 NMR, magnetism and Mössbauer effect in icosahedral  $\text{Al}_{63}\text{Cu}_{25.4}\text{Fe}_{12.5}$ , 189  
 NMR study of electronic structure and H motion in the random b.c.c.  $\text{TaV}_2\text{-H(D)}$  system, 171
- Oxides**  
 EPR spectra of nanocrystalline composite oxides  $\text{La}_{1-x}\text{Sr}_x\text{FeO}_3$  with perovskite structure, 287  
 tribochemical reduction of metals and non-metals from their oxides, 143  
 reaction of Sm with H and Ni-Sm oxides, 99
- Oxygen**  
 new strontium molybdate:  $\text{SrMo}_5\text{O}_8$ , L19  
 $\beta$ - $\text{CuNdW}_2\text{O}_8$  and  $\beta$ - $\text{LiYbW}_2\text{O}_8$  related Cu-Bi-O wolframate:  $\text{CuBiW}_2\text{O}_8$ , L1

- preparation of screen-printed YBCO thick films on alumina substrate under flowing Ar, L39  
residual phases in bulk  $\text{YBa}_2\text{Cu}_3\text{O}_{7-x}$  superconductor, L13  
structure of  $\text{Li}_3\text{Cu}_2\text{O}_4$ , a compound with formal mixed valence, 295
- Permanent magnets**  
crystal and magnetic structures of permanent magnet material  $\text{R}_2\text{Fe}_{14}\text{C}_{0.95}\text{B}_{0.05}$  ( $\text{R} \equiv \text{Ce}, \text{Pr}$ ), 229
- Phthalocyanines**  
crystal and molecular structures of metal free phthalocyanines, 1,2-dicyanobenzene tetramers, 117, 121
- Platinum**  
correlations between electrical resistance–H pressure relationships of Pd/Pt/H system, alterations of structure with changes of H content in Pd/H system, 165
- Plutonium**  
pressure-induced phase transition in  $\alpha$ -plutonium, 237
- Praseodymium**  
ferromagnetic phases in Pr–Nd–Fe, 69
- R.f. plasma spray deposition**  
r.f. plasma spray deposition of La–M–Ox ( $\text{M} \equiv \text{Co}, \text{Mn}, \text{Ni}$ ) films, structure, morphology and catalytic oxidation of CO and  $\text{C}_3\text{H}_8$ , 209
- Rare earths**  
magnetic phase diagrams of  $\text{TbCo}_2\text{Si}_2$ ,  $\text{DyCo}_2\text{Si}_2$ ,  $\text{TbCo}_2\text{Ge}_2$  and  $\text{DyCo}_2\text{Ge}_2$ , L23  
N-gas pressure synthesis and neutron diffraction study of  $\text{R}_2\text{Fe}_{17}\text{N}_3$  with  $\text{R} \equiv \text{Ce}$  and  $\text{Nd}$ , 129  
phase diagram of La–Rh system, 13  
thermodynamic properties of intermetallic compounds  $\text{Re}_2\text{Fe}_{14}\text{B}$  ( $\text{RE} \equiv \text{La}, \text{Ce}, \text{Y}$ ), L9
- Rhenium**  
IR and Raman spectra of Re cluster structures  $\text{Rb}_4\text{Re}_6\text{S}_{13}$  and  $\text{Cs}_4\text{Re}_6\text{S}_{13.5}$ , 181
- Rhodium**  
phase diagram of La–Rh system, 13
- Rubidium**  
IR and Raman spectra of Re cluster structures  $\text{Rb}_4\text{Re}_6\text{S}_{13}$  and  $\text{Cs}_4\text{Re}_6\text{S}_{13.5}$ , 181  
Rb lanthanide double chromates, 265
- Ruthenium**  
 $\text{Ba}_3\text{Ca}_{0.8}\text{Sr}_{0.2}\text{Ru}_2\text{O}_9$ , L43
- Samarium**  
interstitial carbonation of  $\text{Sm}_2\text{Fe}_{17}$  phase by reaction with hydrocarbons, 41  
magnetoresistance and hyperfine fields in  $\text{Sm}_x\text{Fe}_{80-x}\text{B}_{20}$  amorphous alloys, 35  
Mössbauer effect study on magnetic properties of intermetallic compounds  $(\text{Sm}_{1-x}\text{Y}_x)_2\text{Fe}_{17}\text{N}_y$ , 73  
pressure-induced phase transition in  $\alpha$ -plutonium, 237  
reaction of Sm with H and Ni–Sm oxides, 99  
thermodynamic studies of  $\text{YFe}_{12-x}\text{V}_x$  and  $\text{SmFe}_{12-x}\text{V}_x$  alloys, L5
- Selenium**  
case study of  $\text{Cu}_{1-x}\text{Li}_x\text{InSe}_2$ , L17
- Silicon**  
binary system Pd–Si, 249  
surface and bulk properties of  $\text{LaNi}_{5-x}\text{Si}_x$  alloys for battery application, 17  
crystal structure of  $\text{Ba}_5\text{SiO}_4\text{Cl}_6$ , 61
- Silver**  
 $\text{LaAg}_3\text{Al}_2$ ,  $\text{CeAg}_3\text{Al}_2$ ,  $\text{PrAg}_3\text{Al}_2$ ,  $\text{CaAg}_{2.2}\text{Al}_{2.8}$ ,  $\text{SrAg}_{2.5}\text{Al}_{2.5}$  and  $\text{UNi}_2\text{Al}_3$ : compositions with  $\text{CaCu}_5$  structure type and  $\text{CaPd}_3\text{Al}_5$ , a new compound with  $\text{CaCu}_5$ -derived structure type, 201
- Single crystals**  
magnetoresistance in  $\text{ErCo}_2$  and  $\text{HoCo}_2$  single crystals, 83
- Solid oxide fuel cells**  
ternary titanates as anode materials for solid oxide fuel cells, 279
- Strontium**  
 $\text{Ba}_3\text{Ca}_{0.8}\text{Sr}_{0.2}\text{Ru}_2\text{O}_9$ , L43
- Sulphur**  
IR and Raman spectra of Re cluster structures  $\text{Rb}_4\text{Re}_6\text{S}_{13}$  and  $\text{Cs}_4\text{Re}_6\text{S}_{13.5}$ , 181  
theoretical analysis of metal–metal bond alternation leading to tetrahedral metal M4 clusters in  $\text{GaMo}_4\text{S}_8$ -type compounds, 1
- Superconductivity**  
new ternary gallides  $\text{LnPd}_2\text{Ga}$  with  $\text{YPd}_2\text{Si}$ -type structure, 125
- Superconductors**  
structure of  $\text{Li}_3\text{Cu}_2\text{O}_4$ , a compound with formal mixed valence, 295
- Tantalum**  
preparation and structure of  $\text{Li}_7\text{TaN}_4$ , 113
- Thermal expansion**  
high temperature thermal expansion characteristics of  $\text{Ni}_3\text{Al}$  alloys, L33
- Thermodynamics**  
thermodynamic evaluation of the Ni–Zn system, 107
- Thin films**  
thin film metallization by magnetron sputtering from highly pure Mo targets, 157
- Thorium**  
molecular structure, charge distribution in organometallics of 4f and 5f elements. Crystal and molecular structure of tetrakis ( $\eta^5$ -cyclopentadienyl)-thorium(IV) and temperature dependence of its electrical dipole, 269
- Thulium**  
crystal structural refinement of  $\text{TmAlB}_{14}$ , 185
- Titanium**  
electrical conduction behaviour of  $\text{Ba}_{1-x}\text{La}_x\text{Ti}_{1-x}\text{Ni}_x\text{O}_3$  ( $x \leq 0.10$ ) system, 243
- Titanium nitride**  
non-stoichiometry of Ti nitride plates prepared by CVD, 197
- Tungsten**  
 $\beta$ - $\text{CuNdW}_2\text{O}_8$  and  $\beta$ - $\text{LiYbW}_2\text{O}_8$  related Cu–Bi–O wolframate:  $\text{CuBiW}_2\text{O}_8$ , L1  
tribochemical reduction of metals and non-metals from their oxides, 143  
 $\text{Na}_3\text{MN}_3$ , with molybden(VI) and wolfram(VI) with  $[\text{CrO}_2\text{O}_{2/2}]$   $[\text{MoN}_2\text{N}_{2/2}]^3$ -chain, 137
- Ytterbium**  
Yb–Cu–Al system, 161
- Yttrium**  
Mössbauer effect study on magnetic properties of intermetallic compounds  $(\text{Sm}_{1-x}\text{Y}_x)_2\text{Fe}_{17}\text{N}_y$ , 73  
thermodynamic studies of  $\text{YFe}_{12-x}\text{V}_x$  and  $\text{SmFe}_{12-x}\text{V}_x$  alloys, L5
- Zinc**  
thermodynamic evaluation of Ni–Zn system, 107