



ACADEMIC STAFF

Abinandanan T A
Chattopadhyay K
Chokshi A H
Gupta G S
Jacob K T
Jayaram V

Karthikeyan S
Kishore
Natarajan K A
Paul A
Raichur A M
Ramamurty U

Ranganathan S
Sastry D H
Subodh Kumar
Subramanian S
Surappa M K
Suwas S

SCIENTIFIC STAFF

Avadhani G S
Babu V

Deshpande R J
Narayana B V

Ravi R
Shashidhara Pandit S

TECHNICAL STAFF

Gurulinga
Krishnamurthy A N

Padaikathan P
Rajesh N

ADMINISTRATIVE STAFF

Sarojini R

Sreenivasa C S

Sudheer B

SUPPORTING STAFF

Gangadharaiah G
Narasimharaju M

Rajeev Raghu Raj T
Shiva J

Venkatalakshmi M



K. Chattopadhyay

FASc, FNASc, FNAE, FNA, FIIM
Professor & Chairman
Tatachem Chair



Tel: +91-80-23601991/22932262
e-mail: kamanio@met.iisc.ernet.in

Ph.D. (1978), Banaras Hindu Univ.
M.E. (1973), Banaras Hindu Univ.
B.E. (1971), Univ. of Burdhan

Awards: Shanti Swarup Bhatnagar Award; National Metallurgists' Day Award, Govt. of India; MRSI Medal; G.D. Birla Gold Medal

Research Interests: Non-equilibrium processing of materials, Synthesis and phase transformation behavior of nanocomposites, Joining of dissimilar metals, Quasi crystals

Selected Recent Publications:

Victoria Bhattacharya, E. Yamasue, K.N. Ishihara, K. Chattopadhyay, *On the origin and stability of the metastable phase in rapidly solidified Sn-Bi Alloy particles embedded in Al matrix*, Acta Materialia **53**(2005) 4593

G. Phanikumar, K. Biswas, O. Funke, D. Holland-Moritz, D. Herlach and K. Chattopadhyay, *Solidification of undercooled peritectic Fe-Ge alloy*, Acta Materialia **53**(2005) 3591

N. Ponpandian, A. Narayanasamy, C.N. Chinnasamy, N. Shivkumar, J.M. Greneche and K. Chattopadhyay, *Neel Temperature Enhancement in Nanostructured Nickel Zinc Ferrite*, App. Phys. Lett. **86**(2005) 192510

Dheepa Srinivasan and K. Chattopadhyay, *Non-equilibrium transformation involving Li_2-Al_3Zr in ternary Al-X-Zr alloys*, Met. Trans., A **36A**, **2**(2005) 311-320

Total Publications: 230

Teaching: Solidification processing

Major R&D Projects:

Phase transformation studies in nano-embedded materials (DST)
Dissimilar materials welding (DRDO)
Intermetallic (TM-Si) coating by laser ablation for high temperature applications (ARDB)
Development of lead free solder alloy (Cookson Electronic)

T. A. Abinandanan

Associate Professor



Tel: +91-80-22932676
e-mail: abinand@met.iisc.ernet.in

Ph.D. (1991), Carnegie Mellon, USA
B.Tech. (1985), BHU

Research Interests: Phase transformations, Microstructural evolution, Computational modelling

Selected Recent Publications:

M.P. Gururajan and T.A. Abinandanan, *Effect of bond energies on the vacancy behaviour in B2 ordered intermetallics*, Materials Science and Engineering A **A329-331** (2002) 388-394

H. Ramanarayan and T.A. Abinandanan, *Phase field study of grain boundary effects on spinodal decomposition*, Acta Materialia **51** (2003) 4761-4772

H. Ramanarayan and T.A. Abinandanan, *Phase field study of grain boundary effects on spinodal decomposition II. Discontinuous microstructures*, Acta Materialia **52** (2004) 921-930

Total Publications: 36

Teaching: Phase transformations, Thermodynamics

Major R&D Projects:

Diffuse interface models of phase transformations:
A computational study, (Volkswagen Foundation, Germany)

Aloke Paul

Assistant Professor



Tel: +91-80-22933242
e-mail: aloke@met.iisc.ernet.in

Ph.D. (2004), Eindhoven Univ. Tech.,
Netherland
M.E. (1998), IISc, Bangalore
B.Tech (1996), NIT, Durgapur

Research Interests: Electronic Packaging, Diffusion in Solid State,
Thin film interactions

Selected Recent Publications:

A. Paul, A.A. Kodentsov and F.J.J. van Loo, *PhysicoChemical analysis of compound growth in a diffusion couple with two phase endmembers*, *accepted*, *Intermetallics*, 2005.

A. Paul, A.A. Kodentsov and F.J.J. van Loo, *Bifurcation of the Kirkendall plane during interdiffusion in the intermetallic compound bNiAl*, *Acta Materialia*, **52** (2004) 4041

A. Paul, M.J.H. van Dal, A.A. Kodentsov and F.J.J. van Loo, *The Kirkendall Effect in Multiphase Diffusion*, *Acta Materialia*, **52** (2004) 623. 921930

Total Publications : 19

Ashok M. Raichur

Associate Professor



Tel: +91-80-22933238
e-mail: amr@met.iisc.ernet.in

Ph.D. (1995), Univ. of Nevada, USA
M.S. (1992), Univ. of Kentucky, USA
B.E. (1990), MREC, Jaipur

Awards: Metallurgist of the Year Award, Ministry of Steel, 2003;
Biotech Process Development Award, 2003; Humboldt Research
Fellowship, 2004.

Research Interests: Polyelectrolyte thin films and capsules for
drug delivery and biosensors; Surface and colloid chemistry in
nanoparticle processing.

Selected Recent Publications:

S. Guruvenkat, G.M. Rao, M. Komat and A.M. Raichur, *Plasma surface modification of polystyrene and polyethylene*, *Appl. Surf. Sci.* **236** (2004) 278-284

A. Mukherjee, A.M. Raichur, J.M. Modak and K.A. Natarajan, *Dissolution of Cu, Co and Ni from ocean nodules by L-ascorbic acid*, *Chem. Eng. Proces.* **44** (2005) 754-759.

A. Mukherjee, A.M. Raichur, J.M. Modak, *Dissolution studies on TiO₂ with organics*, *Chemosphere*, **61** (2005) 585-588.

Total Publications: 60

Teaching: Biomaterial processing, Advanced surface chemistry

Major R&D Projects:

Novel nanostructured polyelectrolyte multilayer films (DST)

Barium titanate nanoparticle dispersions using biosurfactants (CSIR).

Atul H. Chokshi

Professor

FASc, FNASc, FNA, FNAE



Tel: +91-80-22932684
e-mail: achokshi@met.iisc.ernet.in

Ph.D. (1984), USC, USA
M.S. (1981), USC, USA
B.Tech. (1980), IIT, Madras

Awards: Swarnajayanti Presidential Young Investigator Award; MRSI Medal; Metallurgist of the Year Award; Shanti Swarup Bhatnagar Award

Research Interests: High temperature deformation and fracture of metals, ceramics, composites and nanocrystalline materials, Processing of nanomaterials, ceramics and composites, Creep and superplasticity

Selected Recent Publications:

N. Thangamani, A.S. Gandhi, V. Jayaram and A.H. Chokshi, *Low temperature high pressure consolidation of amorphous Al₂O₃-15 mol% Y₂O₃*, Journal of American Ceramic Society **82**, 2613-2618 (1999)

S. Swaroop, M. Kilo, C. Argirusis, G. Borchardt and A.H. Chokshi, *Analysis of Lattice and Grain Boundary Cation Diffusion in 3YTZ using SIMS*, Acta Materialia, **53**(2005) 4975-4985

R.S. Kottada and A.H. Chokshi, *Low Temperature Compressive Creep in Electrodeposited Monocrystalline Nickel*, Scripta Materialia **53**, 887-92(2005)

Total Publications: 120

Teaching: Mechanical Behavior of Materials, Powder Processing

Major R&D Projects:

Superplastic Mg Alloys (GM)

G. S. Avadhani

Principal Research Scientist



Tel: +91-80-22933246
e-mail: gsa@met.iisc.ernet.in

Ph.D.(2002), IISc
M.Sc.(Engg) (1997), IISc
M.Phil. (1983), Nagpur University
M.Sc. (1981), Nagpur University

Research Interests: Processing Science, Electron Microscopy

Selected Recent Publications:

G.S. Avadhani, *Optimization of process parameters for the manufacturing of rocket casings: A study using processing maps*, Journal of Materials Engineering and Performance, **12 (6)**, (2003) 609-622

G.S. Avadhani, *Dynamic materials modeling technique for optimization of warm workability of Armco iron and binary iron alloys*, Proc. Third International Conference on Mathematical Modeling and Computer Simulation of Materials Technologies (MMT-2004), Sept.6-10, 2004, Ariel, Israel; p.1.1-1.11

M.R. Suresh and G.S. Avadhani, *Hot deformation characteristics of 0.3c - CrMov(ESR) Steel*, Proc. International Conference & Exhibition on Pressure vessels and piping OPE 2006 - Chennai, India February 7-9, 2006, Paper No. B9-5

Total publications: 16

V. Babu

Technical Officer Gr-I



Tel: +91-80-22933247
e-mail: vbabu@met.iisc.ernet.in

AMIIM (1988), IIM, Calcutta
B.Sc. (1974), Bangalore University

Research Interests: Electroslag refining, Extractive metallurgy, Electronics, Vacuum hot press

Selected Recent Publication:

V. Babu and P. Padaikathan, *Structure and hard magnetic properties of barium hexaferrite with and without La_2O_3 prepared by ball milling*, J. Magnetism and Magnetic Materials **241** (2002) 85-88

C. Divakar, L. Rangaraj, P.M. Jaman, S. Usha Devi, M.A. Venkataswamy, V. Babu, *Reactive Hot Pressing of Ceramic-Ceramic composites*, Materials Science & Technology 2000-2004, 174-180

R. J. Deshpande

Scientific Officer



Tel: +91-80-22933237
e-mail: rjd@met.iisc.ernet.in

M.Sc.(Engg) (1988), IISc
M.A.Sc. (1983), Gulbarga University
B.Sc. (1980), Karnataka University

Awards: German Academic Exchange Fellowship (DAAD), 1991-92

Research Interests: Mineral Processing, Biomineral processing

Selected Recent Publications:

R.J. Deshpande and K.A. Natarajan, *Studies on grinding media wear and its effect on flotation of ferruginous phosphate ore*, Minerals Engineering **12** (1999) 1119-1125

R.J. Deshpande, S. Subramanian and K.A. Natarajan, *Effect of bacterial interaction with Thiobacillus ferrooxidans on the floatability of sphalerite and pyrite*, Proc. Int. Seminar on Mineral Processing Technology (MPT 2001), February 15-17, (2001) Hyderabad, 159-161

R.J. Deshpande, S. Subramanian and K.A. Natarajan, *Surface chemical studies on pyrite and arsenopyrite using Acidithiobacillus ferrooxidans*, Proc. Mineral Processing Technology (MPT-2004), Editors. G.V. Rao and V.N. Misra, Allied Publishers Pvt. Ltd., New Delhi, 2004, 668-675

Total Publications: 10

Govind S. Gupta

Associate Professor



Tel: +91-80-22933240
e-mail: govind@met.iisc.ernet.in

Ph.D. (1991), Wollongong, Australia
M.Tech. (1987), IIT, Kanpur
B.E. (1985), VRCE, Nagpur

Awards: National Metallurgists Day Award 2005

Research Interests: Process modeling/design of metallurgical and chemical processes (SiC & BC processes, Blast furnace, Induction furnace, carburizing, roasting), Transport phenomena and fluid particle interaction, Reaction kinetics and thermodynamics, Microwave heating and Iron and Steelmaking

Selected Recent Publications:

M.G. Basavaraj, G.S. Gupta, K. Naveen, V. Rudolph, R. Bali, *Quantification of local liquid holdup in a packed bed using x-rays*, AIChE Journal **51(8)** (2005) 2178-2189

G.S. Gupta, S. Rajneesh, V. Rudolph, V. Singh, S. Sarkar and J.D. Litster, *Mechanics of cavity hysteresis in packed bed*, Material and Metall. Trans. B, **36B**(2005) 755-764

V. Singh, G.S. Gupta and V. Rudolph, *Prediction of minimum spouting velocity in a 2-dimensional flat bottom spouted bed*, Chem Engg Comm, **193(2)** 2006.

Total Publications: 62

Teaching: Transport phenomena, Fluid particle mechanics

Major R&D Projects:

Experimental determination of dispersion coefficient in the packed bed using X-rays and its mathematical modeling (CSIR)
Mathematical modeling of the Acheson process (DST)

K. T. Jacob

FASc, FNA, FNAE, FNASc, FIIM
Professor



Tel: +91-80-22932494
e-mail: katob@met.iisc.ernet.in

D.Sc.(Engg) (1986), Univ. of London
Ph.D. (1970), Univ. of London
D.I.C. (1970), Imperial College
B.E. (1967), IISc
B.Sc. (1964), Univ. of Mysore

Awards: International Hoffman Memorial Prize for Lead Research; National Metallurgists' Day Award; MRSI Medal; Prof. Brahm Prakash Memorial Medal, INSA; Prof. Rustom Chokshi Award for Excellence in Research, IISc; Extraction and Processing Science Award, TMS; G. D. Birla Gold Medal, IIM; Materials Scientist of the Year Award, MRSI

Research Interests: Classical, Statistical and Irreversible Thermodynamics of Materials, Solid State Sensors, High Temperature Corrosion, Phase Equilibria, Materials Processing, Nano Science & Technology, Fuel Cells

Selected Recent Publications:

R. Singh and K.T. Jacob, *Solution of transport equations in a mixed conductor – a generic approach*, Intl. J. Engg. Sci. **42** (2004) 1587-1602

S.N.S. Reddy, D.N. Leonard, L.B. Wiggins and K.T. Jacob, *Internal displacement reactions in multicomponent oxides: Part I. Line compounds with narrow homogeneity range*, Metall. Mater. Trans. **36A** (2005) 2685-2694

S.N.S. Reddy, D.N. Leonard, L.B. Wiggins and K.T. Jacob, *Internal displacement reactions in multicomponent oxides: Part II. Oxide solid solutions of wide composition range*, Metall. Mater. Trans. **36A** (2005) 2695-2703

Total Publications: 352

Teaching: Solid State Sensors, Advanced Thermodynamics of Materials

Major R&D Projects:

Sensors for liquid metals: new materials and concepts (AICTE)
New materials and design for solid oxide fuel cells (SOFC)
Engineering nano-dispersion of Pt-group metal catalysts on ceramic substrates

V. Jayaram

Professor
FASc, FNASc, FNAE



Tel: +91-80-22933243
e-mail: vjayaram@met.iisc.ernet.in

Ph.D. (1984), Stanford
B.A. (Natural Sc.) (1978), Cambridge

Awards: National Metallurgists' Day Award

Research Interests: Mechanical properties of thin films, synthesis and mechanical properties of non-equilibrium ceramics, precursor derived routes to oxide thin films, fabrication of refractory ceramic composites

Selected Recent Publications:

L. Rangaraj, C. Divakar and Vikram Jayaram, *Low temperature reactive hot pressing of TiB₂ - TiN composites*. J. Am. Ceram. Soc., **87**(10) (2004) 1872-1878

A.S. Gandhi, V. Jayaram and A.H. Chokshi, *Low temperature pressure consolidation of amorphous Al₂O₃-Y₂O₃*, N. Thangamani, J. Am. Ceram. Soc. **88**(10) (2005) 2696-2701

S. Bhowmick, V. Jayaram and S.K. Biswas, *Deconvolution of Fracture Property from Load-Displacement Curves of TiN films on Steels*, Acta Mater. **53**, (2005) 2459-2467

S. Bhowmick, Z-H Xie, M. Hoffman, V. Jayaram and S.K. Biswas, *Fracture mode transitions during indentation of TiN coatings on steel*. Phil. Mag. (A) **85**(25), (2005) 2927-2945

Total Publications: 85

Teaching: Structure and characterization, Science of ceramics and Electron microscopy

Major R&D Projects:

Development and mechanical properties of thin films for cutting and automotive applications : DRDO, CSIR-NMITLI

S. Karthikeyan

Assistant Professor



Tel: +91-80-22932513
e-mail: karthik@met.iisc.ernet.in

Ph.D. (2003), The Ohio State University, USA
B.Tech. (1996), Banaras Hindu University

Research Interests: Strainrate, Effects in Plasticity, Creep, Dislocation Theory, Electron Microscopy

Selected Recent Publications:

S. Karthikeyan, H.J. Kim and D.A. Rigney, *Velocity and strainrate profiles in materials subjected to unlubricated sliding*, Physical Review Letters, **95** (2005) 106001

S. Karthikeyan and M.J. Mills, *The role of microstructural stability on compression creep of fully lamellar gammaTiAl alloys*, Intermetallics, **13** (2005), 985

S. Karthikeyan, G. B. Viswanathan and M. J. Mills, *Evaluation of the joggedscrew model of creep in equiaxed gammaTiAl: Identification of the key substructural parameters*, Acta Mater. **52** (2004), 2577

Total Publications: 21

Kishore

Professor



Tel: +91-80-22932683
e-mail: balkis@met.iisc.ernet.in

Ph.D. (1974), IISc
M.E. (1967), IISc
B.E. (1965), IISc
B.Sc. (1963), Mysore University

Awards: National Metallurgists' Day Award

Research Interests: Polymer composites, Wear and friction in materials, Structure property correlations

Selected Recent Publications:

Kishore and S. Santra, *Impact studies in elastomer, flyash and hybrid-filled epoxy composites - part I : Room temperature curing*, J. Reinforced Plastics and Composites **24(9)** (2005) 903-922

Kishore, S. Ravi Shankar and S. Sankaran, *Short beam three point bend tests in syntactic foams:Part III: Effects of interface modification on strength and fractographic features*, J. Applied Polymer Science **98(2)** (2005) 687-693

Pradeep L. Menezes, Kishore and Satish V. Kailas, *Studies on friction and transfer layer using inclined scratch*, Tribology International **39** (2006) 175-183

Total Publications: 162

Teaching: Polymer composites, Polymeric materials and products

Major R&D Projects:

Carbon-carbon composites
Composites for electrical applications

B. V. Narayana

Principal Research Scientist



Tel: +91-80-22933236
e-mail: bvn@met.iisc.ernet.in

Ph.D.(1982), Sri Venkateswara Univ.
M.Sc.(1972), Sri Venkateswara Univ.
B.Sc.(1970), Sri Venkateswara Univ.

Research Interests: Metallurgical Analysis, Corrosion of metals

Selected Recent Publications:

P.V. Sivapullaiah, J. Prashanth, A. Sridharan and B.V. Narayana, *Reactive silica and strength of fly ashes*, Geotechnical and Geological Engineering **16** (1998) 239-250

J.R. Mudakavi, B.V. Narayana and R. Kiran, *Characterization and utilization of iron-rich dry ash from an electric arc furnace*, Current Science, **76** (1999) 473-475

B.V. Narayana, S. Subramanian and K.S. Raman, *Analysis of Al and Al-base alloys with emphasis on the application of inductively coupled plasma atomic emission spectrometry-A review*, Aluminium India **2(2)** (2002) 3-14

Total Publications: 18

K. A. Natarajan

FASc, FNAE, FNASc, FIIM
Honorary Professor
DAE-BRNS Senior Scientist



Tel: +91-80-22932679/23600120
e-mail: kan@met.iisc.ernet.in

D.Sc. (1992), IISc
Ph.D. (1971), Minnesota, USA
M.S. (1969), Minnesota, USA
B.E. (1964), IISc
B.Sc. (1962), University of Kerala

Awards: National Metallurgists' Day Award; Hindustan Zinc Gold Medal; National Mineral Award by the Ministry of Mines; Alumni Award for Excellence in Research (Engineering) by IISc; Mineral Beneficiation Award by the Indian Institute of Mineral Engineers; Biotech Product and Process Development & Commercialisation Award of the Dept. of Biotechnology

Research Interests: Biometallurgy, Hydrometallurgy, Mineral Processing, Corrosion, Environmental Control

Selected Recent Publications:

Partha Patra and K.A. Natarajan, *Microbially-induced flocculation and flotation for separation of chalcopyrite from quartz and calcite*, International Journal of Mineral Processing, **74** (2004) 143-155

M.N. Chandraprabha, K.A. Natarajan and P. Somasundaran, *Selective separation of pyrite from chalcopyrite and arsenopyrite by biomodulation using Acidithiobacillus ferrooxidans*, International Journal of Mineral Processing, **75** (2005) 113-122

P. Somasundaran, Namita Deo, Puspendu Deo and K.A. Natarajan, *Role of biopolymers on bacterial adhesion and mineral beneficiation Minerals & Metallurgical Processing*, **22** (2005) pp 1-11

Total Publications: 300

Teaching: Biomaterials Processing, Biocorrosion

Major R&D Projects:

Environmental impact on metal mining (CEFIPRA)

Investigations on manganese oxide deposition on titanium surfaces by the bacteria present in the coastal waters of Kalpakkam (IGCAR)

Bioextraction of Nickel from Sukhinda Overburden (TATA STEEL)

Microbial Aspects of arsenic Speciation and its bioremediation with respect to ore mining and abandoned mine wastes (DBT)

U. Ramamurthy

Assistant Professor



Tel: +91-80-2293 3241
e-mail: ramu@met.iisc.ernet.in

Ph.D. (1994), Brown Univ., USA
M.E. (1991), IISc
B.E. (1989), Andhra University

Research Interests: Mechanical Behavior of Advanced Materials, with current focus on bulk metallic glasses, shape memory alloys, composites, and metal foams. Additional emphasis on (i) testing small volume materials using indentation techniques and (ii) stochastic aspects of mechanical properties of heterogeneous materials

Selected Recent Publications:

U. Ramamurthy, S. Jana, Y. Kawamura, and K. Chattopadhyay, *Hardness and plastic deformation in a bulk metallic glass*, Acta Materialia, **53** (2005) 705-717

P. Murali and U. Ramamurthy, "Embrittlement in a Bulk Metallic Glass", *Acta Materialia*, **53**, 1467-1478,

N. Suresh and U. Ramamurthy, "Effect of Aging on the Damping Properties of Cu-Al-Ni Shape Memory Alloys," *Smart Materials and Structures*, **14**, (2005) N47-N51.

Total Publications: 66

Teaching: Mechanical behaviour of materials, Fatigue and fracture

Major R&D Projects:

Processing and characterization of bulk metallic glasses for structural applications (DRDO)

Fatigue in shape memory alloy wires (General Motors)

Mechanical property characterization of metallic foams (AR&DB)

S. Ranganathan

FASc, FNA, FNAE, FNASc, FIIM, FTWAS
Honorary Professor
& Senior Homi Bhabha Fellow &
Visiting Professor, IAS



Tel: +91-80-22932558, 23601198
e-mail: rangu@met.iisc.ernet.in

Ph.D. (1965), Cambridge, UK
B.E. (1962), IISc
B.Sc. (Hons) (1960) Univ. of Madras

Awards: National Metallurgists' Day Award, Govt. of India; Distinguished Material Scientist of the Year 2001, MRSI, Platinum Medal, IIM, 2005.

Research Interests: Nanostructured materials, Mesoporous materials, Metallic glasses, Quasicrystals, Metallurgical heritage of India

Selected Recent Publications:

D. Srivastava, S. Banerjee and S. Ranganathan, *The Crystallography of the BCC to HCP (Orthohexagonal) Martensitic Transformation in Dilute Zr-Nb Alloys: Part I: Lattice Strain and Lattice Invariant Shear*, Trans. Ind. Inst. Metals, **57**, (2004) 205.

N. Chen, D.V. Louzguine, Takeshi Kubota, S. Ranganathan and A. Inoue, *Formation of amorphous and icosahedral phases in Ti-Zr-Hf-Ni alloys*, Acta Materialia, **53**, (2005) 759.

Tripti Biswas, S. Ranganathan and H. Kimura, *Compositional Effect on the Stability of the Amorphous Phase in Al-La-Ni Alloys*, J. Metastable & Nanocryst Mater. **24-25**, (2005) 695.

Sharada Srinivasan and S. Ranganathan, *India's legendary wootz steel: An advanced material of the ancient world*, Tata Steel, Jamshedpur, 2004

Total Publications: 270

Teaching: Intermetallics, Design of materials, Imaging Nanomaterials

Major R&D Projects:

Development of Zr, Ti, Hf based bulk metallic glasses and bulk nanocrystalline alloys, Board of Research in Nuclear Sciences
Topological close packing in structurally complex intermetallics (crystalline, quasicrystalline and noncrystalline), AOARD, Tokyo
Advanced magnesium structural alloys, Space Technology Cell, ISRO
Processing and characterization of bulk metallic glasses for structural applications (DRDO)

Satyam Suwas

Assistant Professor



Tel: +91-80-22933245
email:satyamsuwas@met.iisc.ernet.in

Ph.D. (1999), IIT Kanpur
M.Tech. (1994), IIT Kanpur
M.Sc. (1991), B.H.U, Varanasi

Awards: Humboldt Fellowship from Alexander von Humboldt foundation, Germany; Young Engineer of the Year 2003 from Indian National Academy of Engineering (INAE).

Research Interests: Crystallographic texture in structural and functional materials, Deformation and thermomechanical processing, Nanostructured materials by Severe Plastic Deformation

Selected Recent Publications:

L.S. Toth, R. Arruffat Massion, L. Germain, S.C. Baik and Satyam Suwas (2004): *Analysis of texture evolution in equal channel angular extrusion of copper using a new flow field*, Acta Materialia, **52 (7)**, 1885-1898.

Satyam Suwas and A.K. Singh (2004): *Transformation texture in a near alphas titanium alloy IMI 685*, Metallurgical and Materials Transactions A, **35A**, 925-938.

Satyam Suwas, L.S. Toth, J.J. Fundenburger, A. Eberhardt, and W. Skrotzki (2003): *Evolution of texture during equal channel angular extrusion of silver*, Scripta Materialia, **49**, 1203-1208.

Total Publications: 53

R. Ravi

Senior Scientific Officer



Tel: +91-80-22932260, 22933244
e-mail: r ravi@met.iisc.ernet.in

Ph.D.(2005), IISc
M.A. (1997), Annamalai Univ.
M.E. (1994), Anna Univ.
B.E. (1992), T.N.A. Univ.

Research Interests: Computational Science, Datamining, Artificial Neural Networks, Intelligent Knowledge - Based Systems.

Selected Recent Publications:

R. Ravi, Y.V.R.K. Prasad and V.V.S. Sarma, *Development of expert systems for the design of a hot forging process based on materials workability*, Journal of Materials Engineering and Performance, ASM International, **12(6)** (2003) 646-652

R. Ravi, Y.V.R.K. Prasad and V.V.S. Sarma, *Artificial neural network models to predict materials behaviour in hot working*, Advanced Materials and Processes Magazine, ASM International (communicated)

D. H. Sastry

CSIR Emeritus Scientist



Tel: +91-80-22932834
e-mail: dhsastry@met.iisc.ernet.in

Ph.D. (1971), IISc
M.Sc. (Engg.) (1965), BHU
B.E. (1963), IISc
B.Sc. (1961) Andhra University

Research Interests: Mechanical behaviour, X-ray metallography, Alloy development, Stress corrosion.

Selected Recent Publications:

D.H. Sastry, Y.V.R.K. Prasad and S.C. Deevi, *Influence of temperature and strain rate on the flow stress of an FeAl alloy*, Mater. Sci. Engg. A **A299** (2001) 157-163

M. Sujata, D.H. Sastry and C. Ramachandra, *Microstructural characterization and creep behaviour of as-cast titanium aluminide Ti-48Al-2V*, Intermetallics **12** (2004) 691-697

G.S. Murthy and D.H. Sastry, *On the role of grain boundaries in determining the rate process of deformation of materials at high temperatures*, TMS Letters **5** (2004) 105-106

Total Publications: 130

Teaching: Strengthening mechanisms in solids

Major R&D Projects:

Indo-Norwegian program on aluminum technology
Development of iron aluminides for structural applications

S. Shashidhara Pandit

Scientific Officer



Tel: +91-80-22933247
e-mail: pandit@met.iisc.ernet.in

M.E. (1984), Mysore University
M.Sc. (1981), Bangalore University
B.Sc. (1979), Bangalore University

Awards: German Academic Exchange Fellowship (DAAD), 1990-91

Research Interests: Extractive metallurgy, Thermodynamics, Solid state sensors, Electroslag refining

Selected Recent Publications:

S.S. Pandit and K.T. Jacob, *Phase relations in the system CaO-SiO₂-ZrO₂ at 1573 K*, Steel Research **65** (1994) 410-413

S.S. Pandit and K.T. Jacob, *Thermodynamic properties of magnesium phosphate (Mg₃P₂O₈) - Correction of data in recent compilations*, Metall. Mater. Trans. **26A** (1995) 225-227

S.S. Pandit and K.T. Jacob, *Phase relations in the system MgO-SiO₂-ZrO₂ at 1700 K*, Metall. Mater. Trans. **26B** (1995) 397-399

Total Publications: 15

Subodh Kumar

Associate Professor



Tel: +91-80-22933239
e-mail: skumar@met.iisc.ernet.in

Ph.D. (1993), Univ. of London, UK
M.Tech. (1986), IIT, Kanpur
B.Tech. (1983), IIT, Kanpur

Awards: Overseas Research Students Award; Austrian Academy of Sciences Fellowship

Research Interests: Processing, characterization and properties of light metals and composites

Selected Recent Publications:

R. Shabadi, S. Kumar, H.J. Roven and E.S. Dworkadasa, *Effect of specimen condition, orientation and alloy composition on PLC band parameters* : Materials Science and Engineering **A382**, (2004) 203-208.

S. Kumar, H. Dieringa and K.U. Kainer, *Effect of particulate content on thermal cycling behaviour of the magnesium alloy based hybrid composites*, Composites: Part A **36**, (2005) 321-325.

A.K. Mondal, B.S.S. Chandra Rao and S. Kumar, *Wear behaviour of AE42+20% Saffil Mg-MMC* : Tribology International (2006) In press.

Total Publications: 55

Teaching: Mechanical behaviour of materials; Light metals, alloys and composites

Major R&D Projects:

Fracture toughness of advanced aluminium alloys (DMRL)
Fatigue behaviour of graphite fibres reinforced epoxy composites used in Light Combat Aircrafts (ADA)
Functionally gradient age hardenable alloys (ARDB)

S. Subramanian

Professor



Tel: +91-80-22932261
e-mail: ssmani@met.iisc.ernet.in

Ph.D. (1987), Univ. of Mysore
M.Sc. (1976), Univ. of Roorkee
B.Sc. (1974), Univ. of Madras

Awards: Kamani Gold Medal, Indian Institute of Metals.

Research Interests: Surface and colloid chemistry, Mineral processing, Extractive metallurgy, Bio-processing and environmental control

Selected Recent Publications:

L. Saravanan and S. Subramanian, *Surface chemical studies on the competitive adsorption of poly (ethylene glycol) and ammonium poly (methacrylate) onto alumina*, J. Colloid Interface Sci. **284** (2005) 363-377

D. Santhiya, S. Subramanian and K.A. Natarajan, *Effect of bacterial proteins and polysaccharides on the selective separation of sphalerite from galena*, Proc. of the 16th International Biohydrometallurgy Symposium, Cape Town, South Africa, (Eds.) S.T.L. Harrison, D.E. Rawlings and J. Petersen (2005) 325-333.

K.A. Natarajan, S. Subramanian and Jean-Jacques Braun *Environmental impact of metal mining - biotechnological aspects of water pollution and remediation - an Indian experiences* J. Geochemical Exploration (in Press)

Total Publications : 107

Teaching : Interfacial phenomena in materials processing.

Major R&D Projects:

Surface chemical and biogeochemical aspects of heavy metal dissolution and transportation with particular reference to mining and its effect on water quality, (Institute for Research and Development (IRD), France

Environmental impact on metal mining (CEFIPRA-Indo-French Centre for Promotion of Advanced Research)

M. K. Surappa

Professor

Secretary, Karnataka State Council
for Science and Technology
President, Bharath Gyan Vigyan
Samithi



Tel: +91-80-22932697
e-mail: mirle@met.iisc.ernet.in

Ph.D. (1980), IISc
M.Sc.(Engg.) (1976), IISc
B.E. (1973), IISc
B.Sc. (1970), Mysore University

Awards: National Metallurgists' Day Award; MRSI Medal

Research Interests: Solidification, Processing and characterization of metal-matrix composites, Tribology

Selected Recent Publications:

R.A. Saravanan and M.K. Surappa, *Fabrication and characterization of pure magnesium-30vol% SiCp particle composite*, Mat. Sci. Engg. A **A276**, (2000) 108-116

Ranjit Bauri and M.K. Surappa, *Investigations on serrated flow in 8090 Al alloy and 8090 Al-SiCp composites occurring during ultra low load micro hardness (DUH) indentation*, Materials Science and Engineering A, **393**, 2005, 22-26.

Ranjit Bauri, V. Pancholi, I. Samajdar and M.K. Surappa, *Relating Microtexture and dynamic micro hardness in an extruded AA8090 alloy and AA8090-8 vol. % SiC_p composite*, Science and Technology of Advanced Materials (STAM), **6**, 2005, 933-938.

Total Publications: 115

Teaching: Design and Material Selection, Inorganic Matrix Composites

Major R&D Projects:

Friction & Wear behaviour of Aluminium MMC Brake disc/Brake pad during sliding wear (DST)



ACADEMIC PROGRAMMES

To date the department has produced 1557 graduates. The details are listed below:

Degree Courses		Research Programmes	
D.IIsc.	109	A.IIsc.	4
B.E.	598	Ph.D.*	164
M.E.*	409	M.Sc.(Engg.)*	137
M.E.(Int)	115	D.Sc.*	1
M.E.(Mfg. Engg.)	28		
<i>* Programmes currently offered</i>		Grand Total	1557





LIST OF STUDENTS

Ph.D. Registrants

1. Aditi Datta
2. Arindam Paul
3. Arun Kumar B.
4. Ashok Kumar Mondal
5. Bhaskar Prasad Saha (ER)
6. Chander Shekhar
7. Chandrababha M.N.
8. Debdutt Patro
9. Duraisamy Sivaprahasam (ER)
10. Evvie Chockalingam
11. Gopinath Kakkoprath (ER)
12. Gurao Nilesh Prakash
13. Gururajan M.P.
14. Hindol Bandyopadhyay
15. Indrani Sen
16. Jeyakumar M.
17. Krishanu Biswas
18. Krishnan R.(ER)
19. Murali P.
20. Nisha Verma
21. Partha Patra
22. Pradeep Lancy Menezes
23. Prasad M.J.N.V.
24. Radhakrishna Panicker M.R. (QIP)
25. Raja Kumar Sidharada D.
26. Rajdip Mukherjee
27. Ramesh Narayanan (ER)
28. Rangaraj L. (ER)
29. Rejin Raghavan
30. Sabita Sarkar
31. Sanjay Kashyap
32. Santonu Ghosh
33. Sarmistha Bakshi
34. Saswata Bhattacharyya
35. Soma Prasad
36. Somjeet Biswas
37. Srinivasan K
38. Subhradeep Chatterjee
39. Sudarshan
40. Tripti Biswas
41. Udaya Bhat K (QIP)
42. Vasanthakumar B.
43. Victoria Bhattacharya
44. Vijayalakshmi S.P.
45. Vikrant Singh

ER = External Registrant
FN = Foreign National Scholar

QIP = Registrant under Quality Improvement Programme of the University Grants Commission



M.Sc. (Engg.) Registrants

1. Anil Kumar K.N.
2. Chirantan Ghosh
3. Chitra R.
4. Kishora Shetty (ER)
5. Mohd. Abdul Azeem
6. Potnis Prashant Ramesh
7. Rakesh Kumar
8. Ravi Sekhar K. (ER)
9. Rohini Garg
10. Sudha J.

I Year M.E.

1. Gandhi Appala Naidu
2. Kaushik Das
3. Niranjana Behera
4. Vinay Kumar Jain
5. Praveen kumar
6. Snehanshu Pal
7. Sujoy Pal
8. Poorwa Bhagwat
9. Pradipta Ghosh
10. Manas Kumar Mondal
11. Krishna Reddy Jonnala
12. Manohar N
13. Shishir Jain

II Year M.E.

1. Ashwani Kumar
2. Chukka Rami Naidu
3. Debductta Roy
4. Hari Srinivas Goripati
5. Kailash Chandra Jajam
6. Kaushlendra Kumar
7. Lokesh Kumar Paliwal
8. Manoranjan Mishra
9. Nilesh Kumar
10. Pavan Kumar M.
11. Pradeep Agarwal
12. Rajesh K.
13. Rama Krishna M.
14. Ramana Murthy Kolluri N.V.V.
15. Ratnabhupala Reddy P.
16. Santosh Kumar
17. Sugeetha V.
18. Suravarapu Prakasha Rao

MAJOR LABORATORY FACILITIES



Helium pycnometer
JEOL Scanning electron microscope with EDAX
JEOL Transmission electron microscope
JEOL X-ray diffractometer
Metallographic facilities with image analyzer
Differential scanning calorimeter
High resolution scanning electron microscope
Field emission transmission electron microscope

Dartec hot compression testing unit
Impression creep testing unit
Instron testing machines
Instrumented impact testing unit
Eplexor 500N Dynamic Mechanical Analyzer
Nanoindenter
Thin film residual stress measurement system
Ultra-low load microhardness testers

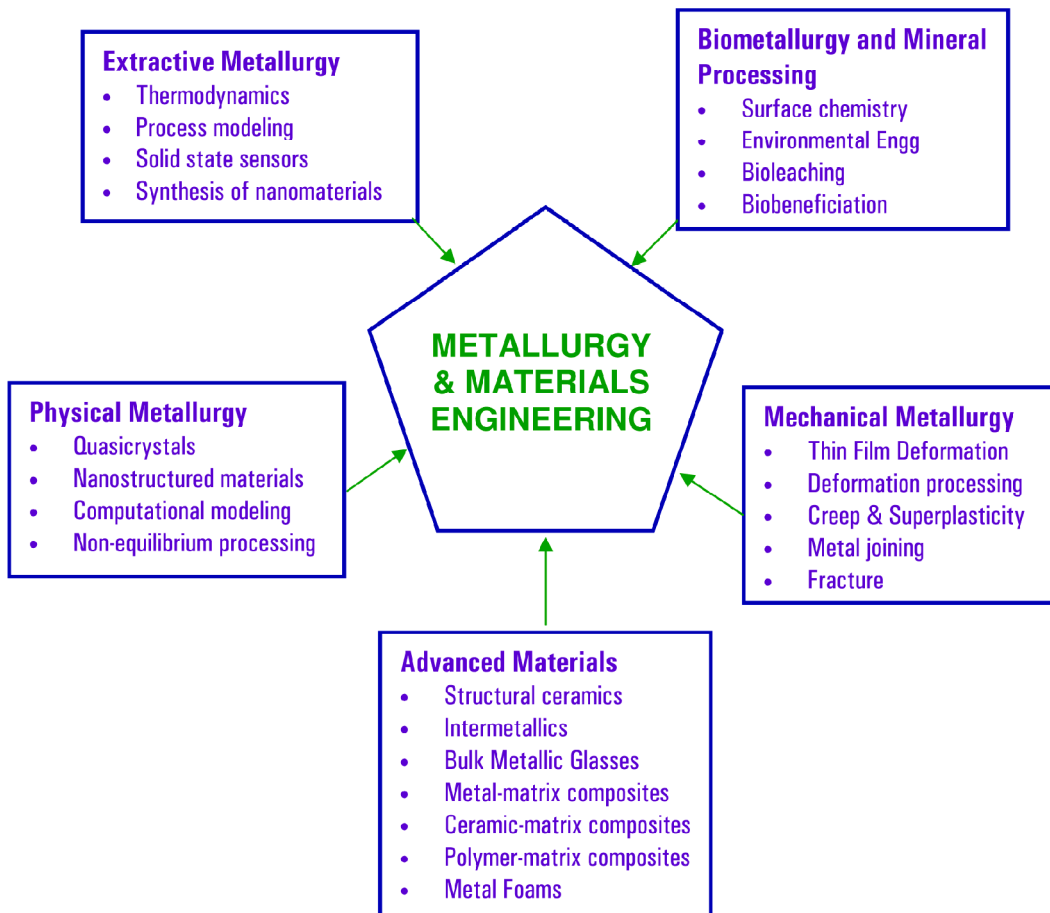


EG&G corrosion measurement console
Jobin Yvon ICP analyzer
Leco oxygen nitrogen analyzer
Malvern particle size analyzer
Shimadzu UV-Visible spectrophotometer
Thermo Jarrel-Ash atomic absorption spectrometer
Zeta-meter

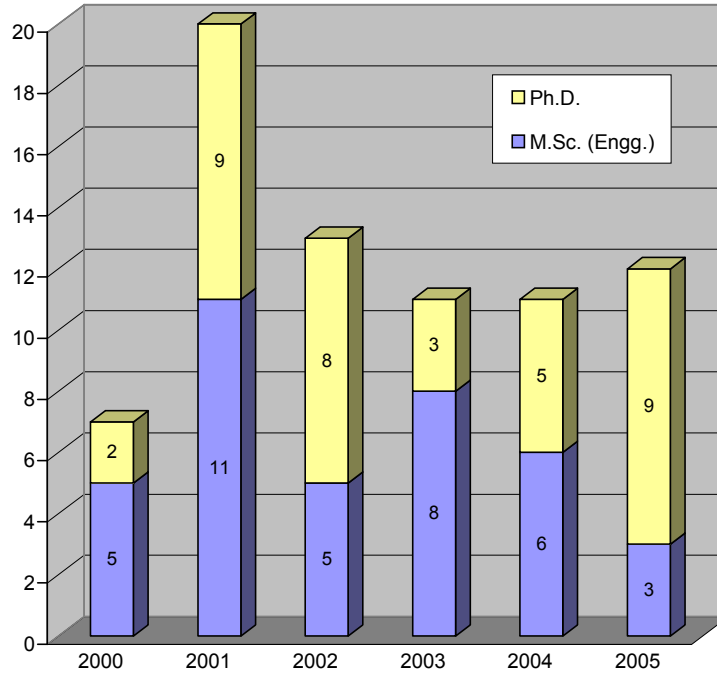
Cold Isostatic Press
Electroslag refining unit
Focused ion beam machining system
Hot extrusion press
Vacuum arc remelting unit
Vacuum hot press
Vacuum induction melting and casting unit



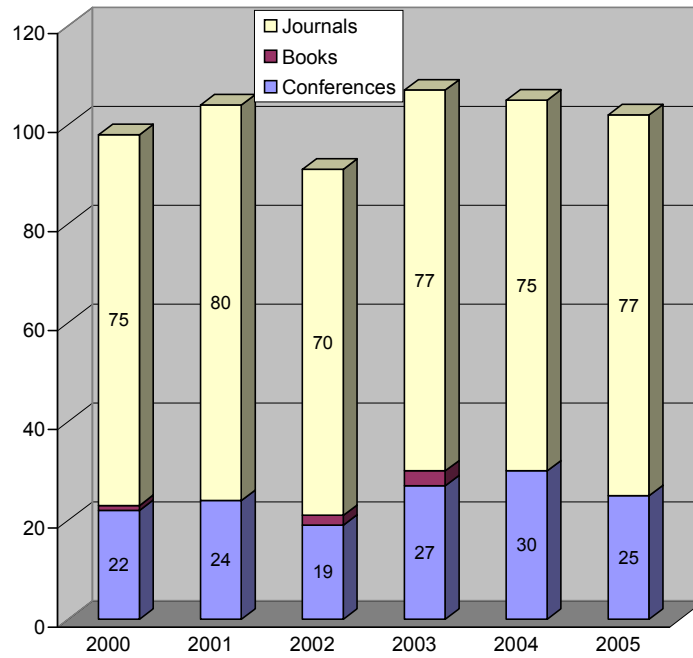
DEPARTMENTAL RESEARCH PROFILE



RESEARCH CONFERMENTS



PUBLICATIONS



CONTACT INFORMATION

Address : Department of Metallurgy
Indian Institute of Science
Bangalore – 560 012, INDIA

Telephone : +91-80-23600120, +91-80-22932259

Facsimile : +91-80-23600472

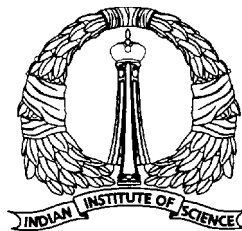
E-mail : office@met.iisc.ernet.in
chairman@met.iisc.ernet.in

URL : <http://www.met.iisc.ernet.in/>

AT A GLANCE . . .

2006

Department of Metallurgy



INDIAN INSTITUTE OF SCIENCE
Bangalore – 560012, India

FOREWORD

The Department of Metallurgy was established in the year 1945 and is dedicated to the advancement of education and research in metallurgy and materials engineering. It had initiated teaching programmes at the bachelor's degree level and master's degree level in 1947 and 1964 respectively. The first ever research conferment in metallurgy in India, A.I.I.Sc, was made in 1951. The first doctoral degree was awarded in 1971 and the first D.Sc. degree was awarded in 1992.

The Silver Jubilee of the Department was celebrated in 1972 with twin International Symposia on "Defect Interactions in Solids" and "Industrial Metallurgy". During 1997, the Golden Jubilee of the Department was marked by an International Symposium on "Recent Advances in Metallurgical Processes". The Diamond Jubilee of the Department will be celebrated from August 2006 to July 2007.

The Department has been recognized as a "Centre of Advanced Study" by the University Grants Commission since 1990 and has earned recognition for Phase III from 2003

Currently, the Department has a faculty strength of 18 academic and 6 scientific staff. Presently 55 research students are enrolled for the Ph.D. and M.Sc. (Engg.) programmes and 29 students are pursuing the M.E. degree. To date the Department has produced 1557 graduates including 164 Ph.D., 137 M.Sc. (Engg.) and 552 Master's degree students.

The Department publishes on an average about 90 papers each year in national and international journals. The research interests of the Department encompass Mineral Processing, Extractive Metallurgy, Physical Metallurgy, Mechanical Metallurgy and Advanced Materials.

The Department is also active in the area of industrial consultancy. In addition, it has strong interaction with the Defence Research and Development Organisation (DRDO), Department of Atomic Energy (DAE) and Indian Space Research Organisation (ISRO). It is also playing a major role in the Institute initiative on nanomaterials. Research collaborations also exist with universities and laboratories in Japan, China, Singapore, UK, France, Germany, Norway, Sweden, Mexico and the USA. The Department gratefully acknowledges the sense of direction and support provided by the successive Directors of the Institute and thanks Prof. P. Balaram, Director, and Prof. J. Srinivasan, Chairman, Division of Mechanical Sciences, IISc for their keen interest and inspired guidance.

Bangalore
January, 2006

Prof K Chattopadhyay
Chairman