

## **M.Sc (Engg.) Programme**

Research programmes were initiated from the inception of the Department. They led to the Associateship of the Institute ( A.I.I.Sc ) in 1951. When the institute became a deemed University, M.Sc ( Engg ) degree was conferred starting from 1960.

<b>A.I.I.SC.</b>	
<b>1951</b>	
1.	V. Aravamuthan (J. C. Ghosh & S. S. Ghosh) Studies on the reaction between carbon and sulphur at high temperatures with special reference to the production of carbon disulphide and desulphurization of Assam coal
<b>1954</b>	
2.	K. G. Udupa (J. Balachandra) Electrowinning of zinc from Zawar concentrates
<b>1956</b>	
3.	M. Mohan Rao (Brahm Prakash) Studies on the direct reduction of zinc sulphide with manganese and ferro-manganese
4.	U. B. Nayak (Brahm Prakash) Soap flotation of zircon, rutile, monazite, quartz and ilmenite

## **M.Sc. (Engg)**

### **1960**

5. H. S. Aswath  
(A. A. Krishnan)  
Studies on the measurement of contact angle and spreading power of tin and tin-lead solders on copper in presence of fluxes

### **1963**

6. J. Ramesam  
(T. R. Anantharaman)  
Development of age-hardenable alloys from Indian aluminium
7. R. K. Ramamurthy  
(A. A. Krishnan)  
Studies on vermiculite and its beneficiation
8. K. Manjunath Pai  
(R. Malikarjunan & A. A. Krishnan)  
Studies on some fatty acid collectors in the flotation of beach-sand minerals of Travancore

**1964**

9. A. V. Ramana Rao  
(A. A. Krishnan)  
Preparation of copper by some powder metallurgical techniques

**1966**

10. M. Murali Mohan Rao  
(K. P. Abraham)  
Studies on the roasting of sphalerite concentrate
11. C. R. Krishna Murthy  
(J. Balachandra)  
Electrodeposition of copper tin alloys from the fluoborate bath
12. E. S. Dwarakadasa  
(A. A. Krishnan)  
Interface energy studies in some copper alloys containing a liquid phase
13. K. S. Raman  
(A.A. Krishnan)  
Studies on the spreading power of some solders

**1967**

14. M. S. Jayaram  
(K. P. Abraham)  
Studies on the chloridisation of low grade ferruginous manganese ores

**1968**

15. S. Sreenivasa Rao  
(T. R. Anantharaman)  
Structural changes in copper zinc alloys

**1971**

16. Satish Mishra  
(K. I. Vasu)  
Age-hardening and related properties of aluminium magnesium alloys

**1974**

17. P. Suryanarayanan  
(M. Mohan Rao)  
Studies on the isothermal decomposition of a copper-27 wt% Sn alloy
18. B. L. Padma  
(R. M. Mallya)  
Electrical resistivity studies in quenched Al-Mg alloys
19. Rajiv Kohli  
(K. I. Vasu)

Oxidation of zirconium alloys

20. D. R. Nagaraj  
(K. I. Vasu)  
Electro-hydrometallurgical recovery of copper from chalcopyrite concentrates

**1979**

21. Prabhakar Sastri  
(G. N. K. Iyengar)  
Energy analysis of aluminium extraction in India

**1981**

22. K. R. Narendranath  
(E. S. Dwarakadasa)  
Influence of beryllium addition on the age hardening, deformation and fracture characteristics of aluminium-5 zinc-4 magnesium alloy

23. D. Suresh  
(P. K. Rohatgi & Kishore)  
Solar furnace for melting metals and alloys

**1982**

24. Gouthama  
(Kishore)  
Effect of trace addition of tin on the isothermal and di-isothermal ageing characteristics of aluminium-0.45 magnesium-0.26 silicon alloy (Hardness, Resistometric and Microscopic studies)

25. P. Gopalan  
(E. S. Dwarakadasa & Kishore)  
Dynamic stress corrosion cracking studies in aged Al-5Zn-4Mg and Al-5Zn-4Mg-0.01Be alloys

**1984**

26. D. Vaman Rao  
(U. B. Nayak)  
Beneficiation of low grade Mussorie phosphate ore by flotation

27. V. I. Gopikrishnan  
(K. I. Vasu)  
Oxidation and tarnishing of aluminium-silicon bronzes - a study with respect to architectural applications

28. P. N. Girija Shankar  
(K. I. Vasu)  
Inhibition of corrosion of mild steel in acid media - galvanostatic and potentiostatic polarisation studies

**1985**

29. Asok Kumar Ray  
(E. S. Dwarakadasa & K. S. Raman)  
Influence of porosity and slag inclusions on the properties of 15CDV6 HSLA steel butt welds
30. Girish P. Ghate  
(K. S. Raman & K. S. S. Murthy (ME) )  
Effect of minor element and trace addition on ageing characteristics and solidification behaviour of the Al-1.7Si-0.3Mg casting alloy

**1986**

31. D. P. Patil  
(U. B. Nayak)  
Selective flotation of scheelite and calcite
32. C. S. Lakshmi  
(R. M. Mallya & E. S. Rajagopal)  
Characterisation of rapidly solidified aluminium-iron alloys
33. N. R. Mandre  
(K. A. Natarajan)  
Environmental aspects in mining and processing of sulphide minerals
34. M. K. Yelloji Rao  
(K. A. Natarajan)  
Electrochemical aspects of sulphide mineral dissolution

**1987**

35. A. W. Bhagwat  
(M. Mohan Rao)  
Phase transformations in a Ti-7.9 at %Nb alloy
36. K. Raviprasad  
(K. Chattopadhyay)  
Studies on rapidly solidified iron-silicon alloys
37. D. S. Srinath  
(E. S. Dwarakadasa)  
Corrosion behaviour of high strength Cu-9Ni-6Sn and Cu-9Ni-6Sn-1Al spinodal alloys in 3.5% NaCl
38. K. Vijayaraju  
(E. S. Dwarakadasa)  
Role of excess vacancies in the ductile fracture of aluminium
39. Debashis Dutta  
(K. Chattopadhyay & C. G. K. Nair HAL)  
Development and evaluation of silicon carbide particulate reinforced aluminium composites

**1988**

40. Durga Subramanian  
(U. B. Nayak)

Optimization studies on molybdenite flotation

41. R. J. Deshpande  
(U. B. Nayak)  
Beneficiation studies on low grade tungsten deposits of Degana, Rajasthan
42. Vathsala  
(K. A. Natarajan)  
Electrochemical aspects of grinding media wear with reference to base metal sulphides
43. K. Asok Kumar  
(K. S. Raman & A. N. Dwarakan (WRI) )  
Development of a friction welding quality control monitor and its evaluation for carbon steel to WRI) carbon steel and steel to aluminium welding
44. A.K.S. Kalyan Kumar  
(Y.V.R.K.Prasad & Kishore)  
Criteria for predicting metallurgical instabilities in processing
45. J. N. Buzruk  
(D. H. Sastry)  
Impression creep behaviour of weldments and rate controlling mechanism of plastic flow of AISI SS 316 at high temperatures
46. D. N. Drakshayani  
(R. M. Mallya)  
Reactivity of solids-reduction of some transition metal oxides and of marine manganese nodules by hydrogen

**1989**

47. C. S. Gundewar  
(K. A. Natarajan & U. B. Nayak)  
Grinding media wear studies with respect to Kudremukh Iron ore
48. N. Jyothi  
(K. A. Natarajan)  
The role of galvanic interactions in the bioleaching of mixed sulphides
49. R. Goswami  
(M. Mohan Rao)  
Lengthening kinetics of alpha plates in Ti-5.9% V alloy
50. S. Murali  
(K. S. Raman & K. S. S. Murthy, ME )  
Ageing characteristics of aluminium-7 % silicon-0.3% magnesium casting alloy with cadmium trace addition and iron impurity

**1990**

51. R.Veeraraghavan  
(K.S.Raman & V.P.Raghupathy, BHEL)  
Effect of welding conditions on the critical cracking stress and determination of critical restraint intensities of a high tensile steel

52. T. R. Govindan Kutty  
(D. H. Sastry & C. Ganguly, BARC)  
Creep studies on metallic nuclear fuels (U, U-5% Zr, U-10% Zr)

**1991**

53. K. Padmanabhan  
(Kishore)  
Flexural behaviour of unmodified and modified fibre reinforced epoxy based composites
54. K. Surnarayana Murthy  
(K. A. Natarajan)  
Bioleaching of a lean grade chalcopyrite ore - Studies on amenability and mechanisms
55. S. Muzhumathi  
(D. H. Sastry & K. I. Vasu, CECRI)  
Corrosion behaviour of equiatomic Nickel-Titanium alloy in 3.5% NaCl, 89 % Conc. H<sub>3</sub>PO<sub>4</sub> and extra-cellularbiofluids.
56. D. Gupta  
(A. K. Lahiri)  
Study of fluid flow in a continuous casting mould

**1992**

57. Sunil Kaushal  
(Kishore )  
Studies on mechanical behaviour, fracture toughness evaluation and fractographic analysis of carbon and rubber modified epoxy matrix reinforced with glass fibres
58. Kalyan Kumar Das  
(K. A. Natarajan and Pradip (TRDDC))  
Electrokinetic investigations on the oxidation of chalcopyrite
59. P. Krishna Sagar  
(Y. V. R. K. Prasad and M. L. Bhatia, DMRL)  
Processing maps for hot working of the intermetallic alloy Ti-24Al-11Nb
60. S. P. Dhandapani  
(M. K. Surappa)  
Studies on the growth of Al<sub>2</sub>O<sub>3</sub>/Al composite into SiC preforms and preliminary studies on the processing of intermetallic matrix composites
61. T. V. Vijaya Kumar  
(U. B. Nayak and R. M. Mallya)  
Studies on oil flotation of wolframite
62. Kishore Kapila  
(K. S. Raman and D. H. Sastry)  
Creep and impact studies on some steel weldments
63. H. R. Muralidhar  
(V. Jayaram)

Al<sub>2</sub>O<sub>3</sub>/Al composites from Al-Zn alloys : Growth and infiltration mechanisms

64. G. Srinivasa Rao  
(U. B. Nayak and R. M. Mallya )  
Selective flotation of serpentine from magnesite
65. S. Vana Varamban  
(K. T. Jacob and C. K. Mathews IGCAR)  
Thermodynamics of sodium-indium, indium-lead and indium-antimony alloys

**1993**

66. R. S. Sundar  
(D. H. Sastry)  
Creep behaviour of Ti-24 Al-11Nb alloy
67. C. Mani  
(Kishore, C. R. L. Murty (AE), V. P. Raghupathy (WRI))  
A study on generation and characterisation of transverse and longitudinal cracks in thick weldments
68. A. Ajay Kumar  
(Kishore)  
Thermal, mechanical and non-destructive characterization of carbon-carbon composites
69. Madhavi Gurram  
(G. N. K. Iyengar, G. R. Nagabhushana, HVE)  
Development of a new bulk breakdown device based on a zinc oxide composite for low voltage surge suppression
70. Jaydeep Sarkar  
(M. K. Surappa)  
The constitutive flow behaviour of Al 6061-SiC<sub>p</sub> MMCs and related relaxation restoration mechanisms during hot deformation
71. N. Ravi Shankar  
(K. Chattopadhyay)  
Early stage plate growth in Cu-Zn Alloys - an attempt at the resolution of the bainite controversy

**1994**

72. N. Krishnan  
(S. Ranganathan, A. K. Lahiri and S. Seshan,ME)  
Simulation of microstructural evolution during grain growth and recrystallization
73. S. Anthonysamy  
(K. T. Jacob & C. K. Mathews)  
Carbon potential in U-Pu-C-O-N system measurements and calculations
74. M. Ravi  
(E. S. Dwarakadasa & B. C. Pai, RRL, Thiruvananthapuram)

Structure - property correlation studies of rare earth additions to Al-7Si-0.3 Mg alloy

**1995**

75. R. Asuvathraman  
(R. M. Mallya & C. K. Mathews)  
Surface characterization of uranium monocarbide using XPS, SIMS and XRD
76. K. Ananthasivan  
(K. T. Jacob & C. K. Mathews)  
Carbon potentials in ternary systems U-M-C (M-Mo,W,Cr)

**1996**

77. Sandip Bysakh  
(K. Chattopadhyay and P. K Das)  
Development of laser ablation technique for production of intermetallic thin film and application to Al-Fe
78. K. S. Balakrishnan  
(E. S. Dwarakadasa and C. Ganguly)  
A comparative study on the evaluation of fracture toughness by using Charpy impact & tension test specimens (AISI 403)
79. Dheepa Srinivasan  
(K. Chattopadhyay)  
Growth morphology and coarsening of metastable Al<sub>3</sub> Zr in Melt spun Al-Ni-Zr alloys
80. S. Sundararajan  
(E. S Dwarakadasa and R. Mahadevan)  
Particulate aluminium matrix composite material (Al-12 Si-SiCp) for I.C engine piston application
81. S. Ganapathi Sharma  
(G. N. K Iyengar and G. R. Nagabhushana)  
Studies on bulk breakdown behaviour of zinc oxide based composites

**1997**

82. S. Maiti  
(T. A Abinandanan)  
Study of surface ordering and disordering
83. G. S. Avadhani  
(Y. V. R. K. Prasad)  
Warm working behaviour of alpha-iron, Fe-Ni alloys: A Study using processing maps
84. Abha Kumari  
(K. A. Natarajan)  
Electrobioleaching of chalcopyrite floatation concentrate
85. P.S. Shankar

- (E. S. Dwarakadasa)  
Near threshold fatigue crack growth study under mixed mode (I-II) loading (2014-T651 aluminium alloy)
86. Saki Krishnamurthy  
(A. H. Chokshi and S. Ranganathan)  
An investigation of the densification and sinter forging characteristics of alumina- yttria composites
87. S. Chirpa Selvi  
(K. A. Natarajan)  
Electrobioleaching of sphalerite flotation concentrate
88. D. Santhiya  
(K. A. Natarajan and S. Subramanian)  
Surface chemical studies on alumina suspensions using polymeric additives
89. Sandeep R. Shah  
(A. H. Chokshi)  
An investigation on the densification and sinter-forging characteristics of  $Al_2O_3$ -MgO composites

#### **1998**

90. Punit Gupta  
(A.K. Lahiri)  
Cold model study of raceway
91. Sharad Chandra Sharma (ER)  
(K.Chattopadhyay and B.C. Pai)  
Indigenous development of a constant modulus alloy for hemispherical resonating gyroscope: processing, properties and performance
92. B. Sudhir  
(A.H. Chokshi)  
Compressive creep characterization of polycrystalline 8 mol% yttria stabilized cubic zirconia
93. H. Ramanarayan  
(T.A. Abinandanan)  
Determination of phase diagrams of model alloy systems: A Monte Carlo study
94. C. Sanjivi  
(S.Ranganathan and A.K.Lahiri)  
Modelling and characterization of spray formed 7075 aluminium alloy and a composite with  $Al_2O_3$ .

#### **1999**

95. T. Balasubramani  
(S. Ranganathan)  
Metastable phases in Al-Cr alloys with ternary and quaternary additions
96. J. Vijay Kumar  
(M.K. Surappa)

Processing And characterization of cast 6061 Al-tin metal matrix composites

97. Indira Ravindran  
(S. Subramanian and M.S. Riyaz Ulla)  
Beneficiation studies on molybdenite ore from Harur area, Tamil Nadu
98. A.C. Niranjanappa  
(E.S. Dwarakadasa and K. Ramchand)  
Characterisation of radar transparent PMC A-sandwich radome panel through oven curing
99. C.S. Karthikeyan  
(Kishore)  
Processing and characterisation of fibre-free and fibre-bearing syntactic foams

## **2000**

100. Sheikh Manjura Haque  
(K.T. Jacob)  
Thermodynamics of alloys with strong interactions
101. M.P. Gururajan  
(T.A. Abinandanan)  
Mean field study of point defects in B2-NiAl
102. N.R. Sathya Swaroop  
(A.H. Chokshi)  
Processing and high temperature deformation of pure and magnesia doped alumina
103. N.V. Ravi Kumar  
(E.S. Dwarakadasa)  
A study of spray atomized and deposited hypereutectic Al-20Si alloy
104. Victoria Bhattacharya  
(K. Chattopadhyay)  
Study of friction and wear behaviour of nanoembedded aluminium alloys

## **2001**

105. M.N. Chandraprabha  
(K.A. Natarajan)  
Studies on bio-oxidation of a refractory gold containing sulphide concentrate with respect to optimization and modelling
106. Evvie Chockalingam  
(S. Subramanian)  
Studies on biodegradation of organic flotation collectors using *bacillus polymyxa*
107. Ghatty S.S.R.K. Sastry  
(A.K. Lahiri)

Cold model study of formation and breaking of raceway

108. V. Sivakumar  
(Subodhkumar)  
Processing characterization and evaluation of functionally graded Al-4.6% Cu alloy
109. S. Swaminathan  
(Vikram Jayaram)  
Processing and characterisation of bulk Al<sub>2</sub>O<sub>3</sub> p / AlN-Al composites by pressureless infiltration
110. Jayasree Thomas  
(S. Subramanian and M.S. Riyazulla, IBM)  
Studies on the recovery of cobalt from Kalyadi copper tailings
111. A.R. Shashikala  
(A.M. Raichur)  
Role of interfacial phenomena in bioprocessing of minerals using *Bacillus polymyxa*
112. P. Dilli Babu Naidu  
(E.S. Dwarakadasa)  
Development of a thermomechanical treatment for optimizing properties of an indigenous 7010 aircraft alloy
113. B.R. Anand  
(D.H. Sastry)  
Effect of aluminum content on the creep resistance of FeAl
114. Hemamalini Thyagarajan  
(S. Subramanian and K.A. Natarajan)  
Studies on the bioremoval of hexavalent and trivalent chromium using *Bacillus Polymyxa*
115. D. Sreelakshmi Desai  
(Kishore)  
Mechanical and micrographic studies in oxide and short fibre bearing Epoxy system in dry and wet state.

## **2002**

116. Subba Rao Mekala  
(A.H. Chokshi)  
An investigation of grain boundary sliding in a superplastic 7475 aluminum alloy
117. Saswata Bhattacharyya  
(T.A. Abinandanan)  
Ternary spinodal decomposition: Effect of interfacial energy
118. G.V.S.S. Prasad  
(T.A. Abinandanan)  
Effect of anisotropy in misfit on precipitate shape: A dynamical study
119. Suresh Chandra Parida (ER)  
(K.T. Jacob and V. Venugopal, B.A.R.C.)

Thermodynamic studies on the systems Ln-Fe-O (Ln=Nd, Sm, Dy)

- 120 Saumyadeep Jana  
( K. Chattopadhyay and U. Ramamurty)  
Subsurface Deformation during Indentation of Bulk Metallic Glasses

### 2003

121. Kisor Kumar Sahu  
(A.K. Lahiri)  
Void Distribution in Packed Bed: Mathematical Modeling and Experimental Study
122. S.P. Vijayalakshmi  
(A.M.Raichur)  
Improved Dewatering of Fine Coal by Vacuum Filtration using Microorganisms as Biofloculants
123. Basavaraj M.G.  
(G.S. Gupta)  
Determination of local Dispersion Co-efficient and Local Holdup in a Packed Bed by using X-rays
124. H.S Jeevan  
(S. Ranganathan)  
Stable and Metastable Phases in Zn-Mg-Re (RE = Y, La, Gd and Dy) Alloys
125. Sangram Keshari Mohapatra  
(K.T.Jacob)  
Deoxidation Studies on the Systems M-Cr-O (M = Fe, Ni, Co)
126. Subray R. Hegde  
(Vikram Jayaram)  
Deposition of 8wt% Yttria Stabilised Zirconia Coatings by Flame Pyrolysis of Solution Precursor
127. P. Mahendiran  
(M.K. Surappa)  
Processing and Characterization of B<sub>4</sub>C Particle Reinforced 6061 Al Composites
128. L. Rangaraj  
(Vikram Jayaram and C. Divakar (Orgn))  
Reactive Hot Pressing of TiN-TiB<sub>2</sub> Composites under Moderate Pressure and Temperature

### 2004

- 129 Rejin Raghavan  
(U. Ramamurty)  
Structural Relaxation and Crystallization in a Pd<sub>40</sub>Cu<sub>30</sub>Ni<sub>10</sub>P<sub>20</sub> Bulk Metallic Glass.
- 130 Santonu Ghosh  
(Atul H.Chokshi)

Influence of Silica on the Compressive Creep Behaviour of 3 mol% Yttria Stabilized Tetragonal Zirconia Polycrystals.

131. N. Suresh  
(U. Ramamurty)  
Aging Response and its effect on Mechanical Properties of Cu-Al-Ni Single Crystal Shape Memory Alloy
132. Sudarshan  
(M.K. Surappa)  
Processing and Characterization of Fly Ash Particle Reinforced A356 Al Composites
133. Sanjitarani Santra  
(Kishore)  
Fabrication of Epoxy Composites with CTBN and Fly Ash as Individual and Hybrid Fillers: Studies on Curing Schedule and Mechanical Properties under Static and Dynamic Loading Conditions
134. M.P. Lakshminarayana Rao  
(Govind S. Gupta)  
Physical and Mathematical Modelling of Boron Carbide Manufacturing Process

## **2005**

135. Ranadeep Bhowmick  
(K. Chattopadhyay and U. Ramamurty)  
Zr-based Bulk Metallic Glass - A study of Processing, Welding & Subsurface Deformation Mechanisms
136. V. Radhika  
(K.A. Natarajan and S. Subramanian)  
Studies on Bioremoval of Zinc and Cadmium using *Desulfotomaculum nigrificans*
137. Manas Mukherjee  
(A.K. Lahiri)  
Bubble Solid Interaction
138. Ravi Shankar  
(Kishore)  
Fabrication, Microstructure and Mechanical Behavior of Epoxy-Microballoons System (Studies on Fractography and Content, Size Distribution and Surface Modification of Microballoons)
139. Rajdip Mukherjee  
(T.A. Abinandanan)  
Precipitate Growth Kinetics: A Phase Field Study
140. Sandeep Namadev Kamble  
(U. Ramamurty and D.V. Kubair (A.E.))  
Indentation Strength of Piezoelectric Ceramics

## **2006**

141. R. Chitra  
(K. Chattopadhyay)  
Synthesis of Cr<sub>3</sub>Si by Mechanical Alloying and Mechanically Activated Process
142. Kandala Ravi Sekhar  
Kishore and S. Sankaran (Orgn.)  
Studies on processing and characterization of syntactic foams with epoxy modified cyanate ester binder and glass microspheres
143. Mohammed Abdul Azeem  
(U. Ramamurty)  
Microstructure and texture evolution and its effect on mechanical properties in dilute magnesium based AZ21 alloy

## **2007**

144. Rakesh Kumar  
(Govind S. Gupta)  
Development and validation of two-dimensional mathematical model of boron carbide manufacturing process
145. Sudha J.  
(Subodh Kumar)  
Fatigue damage characterization of carbon/epoxy laminates under spectrum loading
146. Potnis Prashant Ramesh  
(Vikram Jayaram and S.K. Biswas (M.E.)  
Study of fracture properties of NiAl bond coats on nickel superalloy by three point bending of microbeams
147. Kishora Shetty (ERP)  
(Subodh Kumar and p. Raghothama Rao (Orgn.)  
Ion nitriding of maraging steel (MDN 250A Grade) for light combat aircraft applications

## **2008**

148. Ms. Rohini Garg  
(Satyam Suwas and S. Ranganathan)  
Study of evolution of texture and microstructure during different modes of rolling and annealing of two – phase ( $\alpha+\beta$ ) brass

## **2009**

149. Suman Sarkar  
(Prof. T.A. Abinandanan)  
Effect of Atomic Mobility in the Precipitate Phase on Coarsening: A Phase Field Study

## **2010**

150. Neelam Kaur Mulla  
(Prof. Govind Gupta)  
Study of gas-liquid flow behaviour in raceway zone under pulverized coal Injection