

Dr Projjal Basu



Professor & Head

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Education: **PhD** (Met Eng) IIT Kharagpur, India (1991); **MTech** (Met Eng) IIT Kharagpur, India (1987); **BE** (Met Eng) Jadavpur University, India (1984)

Previous Employment: **(1) SNAM Alloys Pvt Ltd** (Vice President R&D, 2016–2020) **(2) Southern Steel Bhd, Malaysia** (R&D Chief, 2010–2015) **(3) Universiti Sains Malaysia, Malaysia** (Sr Lecturer, Lecturer, 2004–2010) **(4) Al Hoty – Stanger Ltd., Saudi Arabia** (Sr Metallurgist, 2003–2004) **(5) IIT, Kharagpur** (Research Associate, 2000–2003) **(6) Tata Steel** (Group Leader, Dy Manager, Asst Manager, R&D Engineer, 1991–1998) **(7) National Metallurgical Laboratory** (CSIR Fellow, 1987–1991)

Awards & Honors: **(1)** Post Doc Fellow (INDO-US Sc. & Tech. Fellowship), Univ Utah, USA (1994) **(2)** Post Doc Fellow, Univ Pretoria, South Africa (1998–1999) **(3)** CSIR Fellowship, Govt. of India (1987–1991) **(4)** Govt. of India Fellowship for Postgraduate Studies (1985–1987) **(5)** USM Hall of Fame in research (2010) **(6)** USM Merit Certificate (2010) **(7)** Member, All India Study Group, TIFAC (Dept. of Science & Technology, Govt. of India), on “Alternative Iron Making Processes” (1996)

Membership: Life Member (Indian Thermal Analysis Society, Indian Institute of Mineral Engineers, Indian Institute of Metals), Member (ASM International (USA))

Major Projects Involved With: **SNAM Alloys, India** (Alloy development, Yield improvement, Casting metallurgy, Waste management, R&D management); **Southern Steel, Malaysia** (Use of alternate fuel in reheating furnace, Risk assessment of a new Thin Slab Caster & Hot Strip Mill, Technology evaluation, Bioremediation of steel plant wastes, Use of steel making slags, project management); **Universiti Sains Malaysia, Malaysia** (Ultra dilute conducting nano-fluids, Pb and Bi free Sn alloys, Synthesis of MoSi₂ and its composites, Room temperature synthesis and characterization of nano metal carbides, Heat treatment of steel under an electric field, Utilization of low grade iron ore, Oxidation behavior of nano metal carbides, Inclusion management in steel making); **IIT Kharagpur, India** (Failure analysis of metallic components, Smelting reduction of manganese ore, Slag control model, Waste management in metallurgical industry); **Univ Pretoria, South Africa** (Reduction studies of Calsitic Hematite iron ore sinter); **Tata Steel, India** (Refining of high carbon ferrochrome, Physical modeling of charge distribution, Softening – Melting characteristics of blast furnace burden, Slag flaking, Effect of trace elements on slag foaming, Refining of high carbon ferrochrome)

Short Courses Conducted for Industries: **(1)** Organized short course on “*Principles & practice of high quality steel making*”, 17-18Aug’09 & 06-07Nov’08, Malaysian Iron and Steel Industries Federation (MISIF), Kuala Lumpur **(2)** Organized refresher course on “*Steel making*”, 03-04Nov’08, MISIF **(3)** Organized short course on “*Metallurgy of Stainless Steel*” 16-17Jun’10, BBraun Plant, Penang **(4)** Organized short course on “*Advanced Metallurgy*” 07-08Jun’10, Southern Steel, Penang **(5)** Co-lecturer, workshop on “*Advanced Mineral Characterization*”, 27-29Oct’09, USM, Penang **(6)** Invited Speaker (representing Malaysia), Travelling Seminar of MISIF/SEASI on “Controlling and Improving Yield in Steel Making & Rolling Operation”, 23Mar’09, Shah Alam, Malaysia **(7)** Co-lecturer, short course on “*Basic metallurgy*”, 05Jul’08, USM, Penang **(8)** Co-lecturer, short course on “*Heat treatment of steel*”, 26-27Jun’08, MISIF, Kuala Lumpur **(9)** Co-lecturer, short course on “*Clean steel making*”, 12-13May’08, USM, Penang **(10)** Invited Lecture, “*Alternative Routes to Liquid Iron Making*”, IIF, Nov’91, Jamshedpur, India **(11)** Organized one-day course “*Emerging Routes to Liquid Iron*”, Jamshedpur, Apr’93 for Tata Group professionals. Also delivered a lecture on “*Fundamental Aspects of Smelting Reduction Processes*”.

Courses Taught: *Pyrometallurgy, Physical Metallurgy, Materials Thermodynamics, Heat Treatment, Hydrometallurgy, Materials Characterization, Mineral Chemistry, Microscopy, Mineral Processing*

Other Activities & Achievements: (1) "Inoculation & Nodularization in Cast Iron : Mechanism & Thermal Analysis" : 2nd BKC Memorial Lecture, on invitation from Jadavpur University, 13 March, 2018 (2) Member, Nano Materials Initiative Group, School of Materials & Mineral Resources Engineering (SMMRE), Universiti Sains Malaysia (USM) 2005-'10 (3) Member, Academic Board, SMMRE, USM 2004-'10 (4) Member, Niche Area identification group, SMMRE, USM 2009-'10 (5) Academic Advisor for 20 students, USM (First year to Final year) 2005-'10 (6) Member, review and monitoring team, industrial training for 3rd year UG students (10 weeks duration) 2005-'10 (7) Member, Facilities Committee for Outcome Based Education implementation, SMMRE, USM 2007-'08 (8) Member, evaluation committee, Final Year Theses (for both Materials & Mineral Resources Engineering programs, USM) 2005-'10 (9) Member, Working Committee, "3rd Regional Conf Interdisciplinary on Natural Resources & Materials Engg (3rd RC-NMR)", 25-26Oct'10, Langkawi 2010 (10) Member, panel of judges for poster evaluation, "Intl Conf on Recent Advances in Materials, Minerals & Environment", 01-03Jun'09, Penang 2009 (11) Developed a laboratory set up for the characterization of high temperature behavior of iron ore, sinter, pellets 1986-'87 (12) Contributed in the following books as acknowledged by the author(s) : "Beyond the Blast Furnace", Amit Chatterjee, CRC Press, USA 1993; "Kinetics of Metallurgical Processes", H.S. Ray, Wiley Eastern 1993; "Blast Furnace Iron Making", S.S. Gupta & Amit Chatterjee, Tata Steel 1992 (13) Secretary, "Sponge Iron Workshop", 15-16May'93, Jamshedpur, 1993

Session Chairman: (1) Technical Session, 65th IFC & IFEX 03-05Feb'17, Kolkata (2) Waste Treatment session, 2011 SEAISI Economic, Environmental & Safety Seminar 21-22Nov'11, Kuala Lumpur (3) Quality Improvement – Steelmaking session, 2011 SEAISI Conference & Exhibition 23-26May'11, Singapore (4) Keynote Address session, "4th Colloquium on PG Research: National PG Colloquium (MAMIP 2010) 27-28Jan'10, Penang (5) Metallurgy (3 sessions), "Intl Conf on Recent Advances in Materials, Minerals & Environment" 1-3Jun'09, Penang (6) Operation Excellence in Steelmaking (2 sessions), 2009 SEAISI Conference & Exhibition 18-21May'09, Kuala Lumpur (7) Resources Recycling session, "2nd Intl Workshop & Conf on Earth Resources Technology: Stepping towards sustainable Mining, Metallurgical & Petroleum Technology Development" 03-04Apr'08, Bangkok (8) Invited Speakers' session, Intl Conf on Advancement of Materials & Nanotechnology 29May-01Jun'07, Langkawi

Thesis Supervision: PhD (1), Masters (11), UG Final Year Mineral Engineering Project (11), UG Final Year Materials Engineering Project (11)

External Thesis Examination: PhD (3), Masters (7)

Journal Review / Editing: Invited Reviewer : J Alloys & Compounds (Feb'13), High Temperature Materials & Processes (Jan'12, Feb'14), Powder Technology (Jul'11), J Nuclear & Related Technologies (2010), J Physics & Chemistry of Solids (2010), Post Graduate Symposium, USM (Dec'09), J Nuclear & Related Technologies, Special Edition (2009), J Chemical Thermodynamics (2007-08), Malaysian Journal of Microscopy volume III (2007) **Member, Technical Committee** : Intl Conf on Recent Advances in Materials, Minerals and Environment, Penang, Malaysia (1-3Jun'09), IInd Intl Conf on "Alternative Routes to Iron and Steel (ARTIS)", Jamshedpur, India (11-13Jan'96) **Member, Editorial Team** : Proc. "Intl Conf on Solidification Science and Processing : Outlook for the 21st century", Bangalore, India (Feb'01)

Publications: Papers in Intl journals 19 (Materials & Design, J Alloys & Compounds, Ironmaking & Steelmaking, ISIJ Int, Materials Science Forum, Intl J Materials Research, Waste Management, Min Processing & Extractive Metallurgy Review, J Thermal Analysis, J Engineering Mechanics, Procedia Chemistry, SEAISI Quarterly, Arabian J Science & Engineering, Iron), **Papers in National Journals** 4 (Trans Indian Institute of Metals, Iron & Steel Review, Edited book from NML, Edited book from Allied Publishers India), **Seminar/Conference Proceedings** 32 (International 16, National 16), **Presentation** 10

Leisure & Hobbies: (1) Philately & Numismatics (2) Folklores from all over the world (3) Writing short stories in children's magazines (3) Reading & writing poetry (awarded "Poet Fellow for the year 2007" from Noble House Publisher, UK) (4) Outdoor sports (5) Travel