



Dr PK Banerjee

Kolkata, West Bengal, India | +91-8108705596 | pkbanj@gmail.com |

LinkedIn: <https://www.linkedin.com/in/pkbanerjee/>

R&D / TECHNOLOGY ADVISORY LEADER – Mining, Minerals and Metal Industries

Senior technology and research leader with 35+ years of industrial and academic experience spanning integrated iron and steel making, aluminium and copper, coal & coke, mineral beneficiation, process innovation, environment & sustainability, and technology strategy. Built and led high-impact R&D programs across Tata Steel, Hindalco Industries and CSIR-CIMFR, with a strong record in translating research into plant-relevant technologies, strategic roadmaps, IP creation, techno-economic decision support, and decarbonization pathways for heavy industry.

CORE EXPERTISE

- Ferrous & Non-Ferrous industry R&D leadership across raw materials, coke making, coal and mineral beneficiation, agglomeration, alumina refining, aluminium and copper smelting, waste utilization and environmental technologies.
- Strong advisory capability in technology assessment, innovation portfolio design, Lab-to-pilot-to-plant scale-up, external collaboration, and long-range technology roadmapping.
- Experience in linking research outcomes to business value through process improvement, quality enhancement, import substitution, resource efficiency, and sustainability.
- Effective leader of multidisciplinary teams, institutional capability building, doctoral supervision, patents, publications, and national mission-mode programs.

CAREER EXPERIENCE

CSIR-CIMFR, Dhanbad | Outstanding Scientist & Outstanding Professor (AcSIR) | Mar 2022 – Apr 2026

- Developed institutional Vision 2030 and shaped strategic research themes relevant to steel and energy sectors, including import coal substitution, coal-to-chemicals, biomass-coal co-utilization, and critical minerals from coal and mine wastes.
- Mentored teams on mission-mode programs linked to clean coal technologies, decarbonization, resource efficiency, and critical minerals for the steel and energy value chain.
- Led national mega projects on coal sampling, analysis & quality assessment for coal and power companies generating external R&D revenue exceeding ₹500+ crore for CSIR-CIMFR.

Hindalco Industries Ltd. | President & Chief Technology Officer (CTO) | Aug 2014 – Mar 2022

- Led enterprise-wide technology, sustainability, and innovation agenda across aluminium and copper businesses, including 2030 technology roadmap development, pilot-scale capability creation, and structured sustainability deployment.
- Directed programs in energy optimization, circular economy, waste valorization, resource efficiency, digitalization, decarbonization, strengthening board-level technology advisory capability.
- Built institutional systems for R&D prioritization, specialist mentoring, cross-functional execution, and long-term innovation capability.

Tata Steel | Chief Researcher & Acting Chief, R&D and Scientific Services | Aug 1991 – Aug 2014

- Led long-term research in raw materials, coal & iron ore beneficiation, coke making, environmental management, and iron & steel process support for integrated operations.

- Directed thrust area research programs on 8% ash clean coal, beneficiation of iron ore slimes to about 1.5% alumina, and techno-economic models for strategic sourcing of coking coal.
- Supported operational and strategic decisions through plant-focused R&D, process modeling, pilot studies, technology benchmarking, and collaboration with business and operating teams.
- Strengthened IP culture, academic partnerships, and technical capability within the R&D function.

RESEARCH PUBLICATIONS & IP

- 100+ journal publications and extensive conference contributions across coal, coke, mineral beneficiation, iron and steel process support, sustainability, and circular economy.
- 25+ granted patents, 10+ patent applications, and multiple international/PCT filings covering beneficiation processes, coal treatment, dense media systems, coke making, CO₂ to chemicals and related technologies.
- Guided 4 PhD scholars, supervised multiple M.Tech dissertations, and mentored 50+ scientists and engineers across industrial R&D systems.

EDUCATION

Ph.D., Chemical Engineering, IIT Kharagpur, 1995

Specialization: Coal Beneficiation & Clean Coal Technologies

B.Tech (Hons), Chemical Engineering, IIT Kharagpur, 1986

SELECTED PROFESSIONAL ENGAGEMENTS

- Member of CSIR research councils, BIS committees, CSIR and government task forces, and industry expert bodies.
- Former contributor to technical and editorial forums including steel, metals, environment, and sustainability platforms.
- Frequent invited speaker on metallurgical coal & coke making, iron making, decarbonization, resource efficiency, circular economy, and heavy-industry technology strategy.

PROFESSIONAL DISTINCTION

- Metallurgists of the Year, Ministry of Steel, Government of India, 2009
- IIME Mineral/Coal Beneficiation Award, 2008
- Excellence Award, Metal Asia Journal, 2019
- Technology Excellence Award, International Conference on Non-Ferrous Minerals and Metals, 2019
- Named among Top 20 CTOs in India, 2022

DR PK BANERJEE

LIST OF PAPERS PUBLISHED

International Journals

1. Kumar Santosh, Singh Choudhary Akshay K, Sharma, Raj Vardhan, Verma, Ravi Kumar, **Banerjee, Pradip Kumar** and Maity, Sudip, "A Study on Commercial Viability of Rare Earth Elements (REEs) in Coal Ash obtained through Artificial Ashing and Associated Rocks of some Indian Coal Mines", Jour. Geol. Soc. India, 101 (8), 2025, pp 1224–1234
2. Gopinathan, P., Karmakar, A., Karan, K. K., Kumar, O. P., Boral, P., Thakur, S. K., Kumar, S., Singh, V., Kumari, P., Perween, A., Sharma, J., Mahato, A., Raghuvanshi, G., Jha, M., Ghosh, A. K., & **Banerjee, P. K.**, "Rare earth elements geochemistry, mineral hosts and recovery potential from Singrauli coalfield, India", Physics and Chemistry of the Earth, Parts A/B/C, 141, 104101, 2025
3. Karmakar, Amit, Gopinathan, P, Subramani, T, Nayak, Amya S, Sethi, MK, Santosh, MS, Sarkar, Pinaki and **Banerjee, Pradip Kr**, "Optimizing the use of Indigenous high ash bituminous coal for sustainable pulverized coal injection and efficient energy transfer", Scientific Reports, 15:40061, 2025
4. Gopinathan, P, Khan, Afaq Ahmad, Singh, Vivek, Santosh, M. S, Subramani, T, Karmakar, Amit, Kumar, Surender, Md Asif, Kumar, Om Prakash, Naik, Amiya S, **Banerjee, Pradip K**, and Sarangi, Prakash K, "Photothermal conversion and geochemical characterization of sulfur-rich lignite for non-conventional energy applications", Scientific Reports, 15:6945, 2025
5. Karmakar, A., Gopinathan, P., Kumar, O. P., Sethi, M. K., Subramani, T., Santosh, M., & **Banerjee, P. K.** (2024), "Transformation in energy content of non-coking coals during differential settling beneficiation process: Implications for energy impact", Fuel, 377, 132662, 2024
6. Gopinathan, P., Mahato, A., Kumar, O. P., Kumar, A., Subramani, T., Karmakar, A., Hazra, B., **Banerjee, P. K.**, Saini, M. K., & Sethi, M. K., "Evaluation of Singrauli Coals for Sustainable Energy Utilisation: Insight From Geochemical and Petrographic Perspectives". Geological Journal, 60(11), September 2024, pp 2598-2620
7. Tripathy, Sunil Kumar, **Banerjee PK**, Suresh Nikkam. Rama Murthy Y, Singh Veerendra, Dry high intensity magnetic separation in mineral industry – a review of present status and future prospects, Mineral Processing and Extractive Metallurgy review, Vol 38 (6), 2017, pp 339-365
8. Ashrit, S, Banerjee, PK, Nair UG and Rayasam, V, "Thermodynamic analysis of LD slag waste fines in the range of 0-6 mm and establishing the correlation between free lime and weight loss of LD slag fines", Metallurgical Research and Technology, Vol 114 (3), 2017, pp 310
9. Sriramoju, SK, Suresh, A, Lingam, RK, Ray T, Dash, PS and **Banerjee, PK**, "Optimisation of process conditions for leaching of middling coal", Int Jr of Coal Preparation & Utilization, Vol 38 (2), 2016, pp 88-97
10. Dixit, P, Tiwari, R, Mukherjee, AK and **Banerjee, PK**, "Application of response surface methodology for modelling and optimization of spiral separator for processing of iron ore slime", Powder Technology, Vol 275, 2015, pp 105-112
11. Jaiswal S, Tripathy SK, **Banerjee PK**, "An overview of reverse flotation process for Coal", Int Jr of Mineral Processing, Vol 124, 2015, pp 97-110
12. Ashrit, S, **Banerjee, PK**, Chatti, RV, Venugopal, R and Udaybhanu, G, "Characterization of gypsum synthesized from LD slag fines generated at a waste recycling plant of a steel plant, New Journal of Chemistry, Vol 39 (5), 2015, pp 4128-4134

13. Ashrit, S, **Banerjee, PK**, Chatti, RV, Rayasam V and Nair UG, "Synthesis and characterization of yellow gypsum from LD slag fines generated in a steel plant, *Current Science*, 2015, pp 727-732
14. Ray, T, Suresh, A, Dash, PS and **Banerjee PK**, "Instrumentation and Automation system at coal leaching pilot plant", *Int Jr of Automation and Control*, Vol 9 (2), 2015, pp 158-171
15. Dash, PS, Kumar SS, **Banerjee, PK** and Ganguly, S, "Effect of elevated temperature and pressure on the leaching characteristics of Indian Coals", *Fuel*, Vol 140, 2015, pp 302-308
16. Dash, PS, Sriramoju, SK, Kargupta, K, **Banerjee, PK**, Ganguly, S, Characterisation of chemically beneficiated Indian coals, *Int Jr of Coal Preparation & Utilization*, Vol 35 (5), 2015, pp 257-272
17. Dash, PS, Prasad, DN, Sriramoju, SK, Lingam, RK, Suresh, A and **Banerjee, PK**, "Maximizing demineralization during chemical leaching of coal through optimal reagent addition policy", *Chemical Product and Process Modelling*, Vol 10 (1), 2015, pp 1-10
18. Singh Alok K, **Banerjee PK**, Singh Prakash K, Das Arijit, Study of washability characteristics of coals from Seam-IX of Jamadoba Colliery of the Jharia basin, India, *Energy exploration & Exploitation*, Vol 33 (2), 2015, pp 181-202
19. Sahu, SG, Mukherjee, A, Kumar, M, Adak, AK, Sarkar, P, Biswas, S, Tiwari, HP, Das A, **Banerjee, PK**, *Applied Thermal Engineering*, Vol 73, 2014, pp 1012-1019
20. Tiwari, HP, **Banerjee, PK**, Saxena, VK, Halder, SK, "Effect of Indian medium coking coal on coke quality in non-recovery stamp charged coke oven", *Journal of Iron and Steel Research International*, Vol 21 (7), 2014, pp 673-678
21. Tiwari, HP, **Banerjee, PK**, Saxena, VK, Sharma, R, Halldar, SK, Verma, S, "Efficient way to use of non-coking coals in non-recovery coke making process", *Metallurgical Research & Technology*, Vol 111 (4), 2014, pp 211-220
22. Tiwari, HP, **Banerjee, PK**, Saxena, VK, Sharma, R, Haldar, SK and Paul, S, "Effect of heating rate on coke quality and productivity in nonrecovery coke making", *Int Jr of Coal Preparation & Utilization*, Vol 34 (6), 2014, pp 306-320
23. Sharma, R, Tiwari, HP and **Banerjee, PK**, "Producing high coke strength after reactivity in stamp charged coke making", *Coke and Chemictry*, Vol 57 (9), 2014, pp 351-358
24. Sharma, R, Kumar D, Tiwari, HP and **Banerjee, PK**, "A new way of coke quenching to improve the quality of coke at Tata Steel", *Coke and Chemistry*, Vol 57 (7), 2014, pp 288-295
25. Tiwari, HP, **Banerjee, PK**, Sharma, R, Haldar, SK and Joshi, PC, "A comparative study of by-products yield from coke making processes in a Jenkner apparatus", *Coke and Chemistry*, Vol 57 (5), 2014, pp 192-198
26. Tiwari, HP, **Banerjee, PK**, Sharma, R, Haldar, SK, Kumar A and Roy, A, "Effects of binder on recovery stamp charged coke making process", *Coke and Chemistry*, Vol 57 (1), 2014, pp 10-17
27. Dash, PS, Sriramoju, SK, Prasad, DN, **Banerjee, PK**, Ganguly, S and Kargupta, K, "Formation of carbon nanostructure during chemical demineralization of Indian coals", *Int Jr of Coal Preparation & Utilization*, Vol 34 (5), 2014, pp 276-283
28. Dash, PS, Radha Krishna, PV, Suresh, A and **Banerjee, PK**, "SCADA based control system for pilot plant for chemical leaching of high ash Indian coals", *Int Jr of Automation and Control*. Vol 8 (4), 2014, pp 362-380
29. Dwarapudi, S, **Banerjee PK**, Chaudhary, P, Sinha, S and Chakraborty, U, "Effect of fluxing agentson the swelling behavior of hematite pellets", *Int Jr of Mineral Processing*, Vol 126, 2014, pp 76-89
30. Sriramoju, SK, Suresh, A, Dash, PS and **Banerjee, PK**, "Parameter estimation of kinetic model equations for chemical leaching of coal", *Chemical Product and Process Modelling*, Vol 9 (2), 2014, pp 133-141
31. Singh Veerendra, **Banerjee PK**, Tripathy SK, Saxena VK, Venugopal R, Artificial neural network modelling of ball mill grinding process, *J Powder metallurgy & Mining*, Vol 2 (2), 2013, pp 1-4

32. Tiwari, HP, **Banerjee, PK** and Saxena, VK, "A novel technique for assessing the coking potential of coals/coal blends for non-recovery coke amking process", *Fuel*, Vol 107, 2013, pp 615-622
33. Dash, PS, Kumar S Santosh, **Banerjee, PK**, Ganguly S, "Chemical leaching of high ash Indian Coals for production of low ash clean coal", *Mineral Processing & Extractive Metall. Rev.*, Vol 34, 2013 pp 223-239.
34. Nag D, Das, B, **Banerjee, PK**, Haldar, SK and Saxena, VK, "Methodology to improve mean size coke for stamp charge battery", *Int Jr of Coal Preparation & Utilization*, Vol 33 (3), 2013, pp 128-136
35. Banerjee, Angela Sarkar, Supriya and **Banerjee PK**, "New trends in removing pollutants from steel industrial wastewater", *Steel Tech*, Vol 7, No 3, 2013, pp 71-75.
36. Sharma, R, Dharmendra, K, Tiwari, HP and **Banerjee, PK**, "Study on coke size degradation from coke plant wharf to blast furnace stock house", *Coke and Chemistry*, Vol 56 (11), 2013, pp 412-418
37. Singh, V, Purkait, MK, Chandaliya, VK, Biswas, PP, **Banerjee, PK** and Das, C, "Development of membrane based technology for the separation of coal from organic solvent", *Desalination*, Vol 299, 2012, pp 123-128
38. Tiwari, H P, Saxena, VK, **Banerjee, PK**, Haldar, SK, Sharma, R and Paul Sanjoy, "Study on heating behavior of coal during carbonization in Non-recovery oven", *Int Jr of Metallurgical Engineering*, Vol 1 (No 6), 2012, pp 105-112
39. Dash, PS, Guha, M, Chakraborty, D and **Banerjee, PK**, "Prediction of Coke CSR from Coal Blend Characteristics using Various Techniques:A Comparative Evaluation", *International Journal of Coal Preparation and Utilization*, Vol 32, 2012, pp 169-192.
40. Lingam, RK, Dash PS and **Banerjee PK**, "Production of low ash clean coal in India: an essential step towards energy security and environmental protection", *Steel Tech*, Vol 7, No 1, 2012, pp 23-30.
41. Suresh, A, Ray, T, Dash PS and **Banerjee PK**, "Prediction of coke quality using adaptive neurofuzzy inference system", *Ironmaking and Steelmaking*, Vol 39, No 5, 2012, pp 363-369.
42. Chandaliya, Vimal Kumar, **Banerjee, PK** and Biswas, Pinakpani, "Optimisation of solvent extraction process parameters of Indian Coal", *Mineral Processing and Extractive Metallurgy Review: An International Journal*, 33:4, 2012, pp 246-259.
43. Manna, Manindra, Sasmal, Sukanya, **Banerjee, PK** and Sengupta, Dilip Kumar, "Selective dispersion of rejected iron ore ultra fines for feed to Blast Furnace and minimize environmental issues", *ISIJ International*, Vol. 51, No 11, 2011, PP 1929-1933.
44. Nag, Debjani, **Banerjee, PK**, and Haldar, SK, "Heat Altered Coal and Its Use in Metallurgical Coke", *ISIJ International*, Vol. 51, No. 7, 2011, pp. 1194-1196.
45. Manna, M, Sasmal, S, **Banerjee, PK** and Sengupta, DK, "Effect of mineral geology, mineral size and settling time on selective dispersion and separation process for recovering iron value from iron ultra fines", *Powder Technology*, 211, 2011, PP 60-64.
46. Nag, Debjani, Biswas, P, Chandaliya, VK and **Banerjee, PK**, "Characterisation of a solvent extract of an Indian Coal", *International Journal of Coal Preparation and Utilization*, 31:1, 2011, PP 1-8.
47. **Banerjee, PK**, "Beneficaition of Indian Coal – a Future Outlook", *Steel Tech*, 4:4, 2010, pp 9-18.
48. Nag, Debjani, Haldar, SK., Choudhary, PK and **Banerjee, PK**, "Prediction of Coke CSR from Ash Chemistry of Coal Blend", *International Journal of Coal Preparation and Utilization*, 29: 5, 2009, PP 243-250.
49. Nag Debjani, Singh, AK and **Banerjee, PK**, "Metallurgical use of heat altered coal: a case study", *Journal of Minerals & Materials Characterization & Engineering*, 8:7, 2009, pp 541-549.
50. Chakraborty, Debad, Guha, M and **Banerjee, PK**, "CFD simulation on influence of superficial gas velocity, column size, sparger arrangement, and taper angle on hydrodynamics of the column flotation cell", *Chemical Engineering Communications*, 196:9, 2009 , pp 1102-1116.
51. Upadhyay, RK, Roy, S, Venkatesh, AS, Rao, MVS Rao and **Banerjee, PK**, "Relevance of geological aspects and ore mineralogy in selecting beneficiation methods for processing of eastern Indian iron

- ores", Mineral Processing and Extractive Metallurgy (Trans. Inst. Min Metall. C), 118:1, 2009, pp 49-59
52. Gupta, AK and **Banerjee, PK**, "Influence of chemical parameters on selectivity and recovery of fine coal through flotation", Int. J of Mineral Processing, 92, 2009, pp 1-6.
 53. Chakraborty, Debadi; Singh, AK and **Banerjee, PK**, "Floatability characteristics: case study with three typical Indian prime coking coals", Mineral Processing and Extractive metallurgical Review, 29:4, 2008, pp 299-317.
 54. **Banerjee, PK**; Gupta, AK; Mukherjee, AK; Das, P; Singh, NP and Singh, RS, "Optimization of reagents distribution down a coal flotation bank to improve the recovery of coarser particles", Coal Preparation, 27:1-3, 2007, pp 39-56
 55. Sripriya, R; **Banerjee, PK**; Baijal, AD; Dutta, A; Rao, MVS and Chatterjee S, "Dense-medium cyclone: plant experience with high near-gravity material Indian coals", Coal Preparation, 27:1-3, 2007, pp 78-106
 56. Gupta, Ashiwani Kumar; **Banerjee, PK** and Mishra Arun, "Effect of frothers on foamability, foam stability and bubble size", Coal Preparation, 27:1-3, 2007, pp 107-125
 57. **Banerjee, PK**; Das, A; Gupta, AK; Prasad, A; Misra, AK and Mishra AM, "Challenges in dewatering of Indian medium coking coals: case studies with chemical reagents", Coal Preparation, 27:1, 2007, pp 167-189
 58. Gupta, Ashiwani Kumar; **Banerjee, PK**; Dutta, Atanu and Mishra Arun, "Recovery of clean coal fines through a combination of gravity concentrator and flotation processes", Mineral Processing and Extractive Metallurgy Review, 28:4, 2007, pp 299-319
 59. Dash, PS; Krishnan, SH, Sharma, R and **Banerjee, PK**, "Laboratory scale investigation on maximizing utilization of carbonaceous inerts in stamp charging to improve coke quality and yield", Ironmaking and Steelmaking, vol 34, no 1, 2007, pp 23-29
 60. Gupta, Ashiwani Kumar; **Banerjee, PK**; Mishra, Arun; Satish, P and Pradip, "Effect of alcohol and polyglycol ether frothers on foam stability, bubble size and coal flotation", Int. J. Miner. Process., 82, 2007, pp 126-137
 61. Narasimha, M, Sripriya, R and **Banerjee, PK**, "CFD modeling of hydrocyclone – prediction of cut size", Int. J. Miner. Process., 75, 2005, pp 53-68.
 62. Sharma, R, Dash, PS, **Banerjee, PK** and Kumar, D, "Effect of Coke Micro-Textural and Coal Petrographic Properties on Coke Strength Characteristics", ISIJ, 45-12, 2005, pp 1820-1827.
 63. Dash, PS, Krishnan, SH, Sharma, R, **Banerjee, PK** and Haldar, SK, "Laboratory scale investigation to improve the productivity of stamp charge oven through optimization of bulk density of coal cake", ISIJ, 45-11, 2005, pp 1577-1586.
 64. Sripriya, R, **Banerjee, PK** and Rao PVT, "Effect of operating variables on the performance of dense-media cyclone – a critical study", Minerals and Metallurgical processing, Vol 21, No 2, May 2004, pp 71-76.
 65. **Banerjee, PK**, Rao TC, Govindarajan, Bapat, JP, Chatterjee, S, Barnwal, JP and Rao PVT, "A plant comparison of the vorsyl separator and dense medium cyclone in the treatment of Indian coals", Int. J. Miner. Process., 69, 2003, pp 101-114.
 66. Sripriya, R, **Banerjee, PK**, Rao, PVT, Dutta, A and Rao, MVS, "Critical evaluation of factors affecting the operation of dense medium cyclones treating medium coking coals", Int. J. Miner. Process., 63, 2001, pp 191-206.

National Journals

67. Panda, Mahima, Hazra, Bodhisatwa and **Banerjee Pradip Kr**, "Coal Petrography and its importance to coal based industries", SGAT Bulletin, Vol. 26, No. 1, June 2025, pp. 1-12
68. Verma, Ravi Kumar, Maity, Sudip and **Banerjee, Pradip K**, "Critical and Rare Earth Elements in mining and process wastes: few opportunities", SGAT Bulletin, Vol. 25, No. 1, June 2024, pp. 11-22
69. Hazra, Bodhisatwa and **Banerjee, Pradip Kumar**, "Lignite as a potential source of clean energy in India", SGAT Bulletin, Vol. 23, No. 2, December 2022, pp. 32-3
70. Tripathy, SK, Ramamurthy, Y, Panda, L, Singh, V, **Banerjee, PK** and Bhatnagar, Atul, "A review on dolomite: genesis, application and processing", Journal of Mines, Metals and Fuels, Apr 2013, pp 93-102.
71. Gurulaxmi, NS, Chandaliya, Vimal and **Banerjee, PK**, "De-oiling mill scale using solvent extraction", Tata Search, Vol 1, 2013, pp 23-29.
72. Tiwari, HP, Saxena, VK, **Banerjee, PK**, Sharma, R, Haldar, SK and Paul, S, "Selection of coals for non-recovery stamp charged process: a case study", Tata Search, Vol 1, 2013, pp 53-59.
73. Sharma, R, Kumar, D, Tiwari, HP, Kumar, Arbind and **Banerjee, PK**, "Investigation on coke strength and fissure formation with change in quenching condition of hot coke in Battery No 8", Tata Search, Vol 1, 2013, pp 75-82.
74. Singh, Veerendra, **Banerjee, PK**, Tripathy, SK and Saxena, VK, "Predicting the milling efficiency of ball mill using artificial neural network", Tata Search, Vol 1, 2013, pp 257-260.
75. Sharma, R, Haldar, SK, Agarwal, R, Kumar, Arbind, Tiwari, HP and **Banerjee, PK**, "Laboratory studies of coal blends to produce coke with greater than seventy coke strength after reaction (CSR)", Tata Search, Vol 1, 2012, pp 61-66.
76. Chandaliya, VK, Biswas, Pinakpani and **Banerjee, PK**, "An introduction: solvent extraction of coal to produce low ash clean coal", Tata Search, Vol 1, 2012, pp 91-96.
77. Dash, PS, Lingam, RK, Kumar, S Santosh, Suresh, A, **Banerjee, PK** and Ganguly, S, "Chemical leaching of Indian coals under atmospheric pressure to produce low ash coal", Tata Search, Vol 1, 2012, pp 153-160.
78. Agarwal, Rakesh, Roy, Abhijit, Tiwari, HP, **Banerjee, PK**, Prakash Anant and Haldar, SK, "Impact of Coal Blend Properties & Coke Quality due to Weathering of Coal", Tata Search, Vol 1, 2011, pp 103-107.
79. Suresh, A, Ray, Tathagata, Dash, PS and **Banerjee, PK**, "Coke CSR prediction from coal blend properties using neuro-fuzzy based model", Tata Search, Vol 1, 2011, pp 113-118.
80. Sriramoju, SK, Suresh, A, Lingam, RK, Ray, Tathagata, Dash, PS and **Banerjee, PK**, "Application of Shrinking core model for Chemical leaching of Coal", Tata Search, Vol 1, 2011, pp 119-123.
81. Sharma, R, Haldar, SK, Agarwal, R, Tiwari, HP, and **Banerjee, PK**, "Pilot oven trials to explore use of tar as a binder in stamp charged cake", Tata Search Vol 1, 2011, pp 139-141.
82. Chandaliya, Vimal Kr, **Banerjee, PK** and Biswas, Pinakpani, "Optimization of lab scale parameters for solvent extraction of West Bokaro coal", Tata Search 2010, pp .
83. Tiwari, HP, Suri, S, **Banerjee, PK**, Sharma, R and Agarwal, Rakesh, "Optimisation of coal blend for heat recovery coke oven", Tata Search, 2010, pp .
84. Kopparthi, Prasad, **Banerjee, PK**, Chakraborty, S and Meikap, BC, "Hydrodynamic studies in a down flow water jet bubble column", Tata Search, 2010, pp .
85. Nag, Debjani, **Banerjee, PK**, Singh, AK and Sharma, R, "Some studies for use of Jhama coal in metallurgical industries", Tata Search, 2009, pp 103-106.
86. Sharma, R, Haldar, SK, Agarwal, Rakesh, Choudhary, PK and **Banerjee, PK**, "Selection of coal for top and stamp charging coke making at Tata Steel", Tata Search 2009, pp 123-126.

87. Singh Alok Kr; **Banerjee, PK**; Mishra Arun and Ojha, AK, "Characters of Seam no VI from West Bokaro, A Permian coal deposit, Jharkhand, India", Tata Search, 2008, pp 179-185.
88. Tiwari, Hari Prakash; **Banerjee, PK**, Sharma, R and Joshi, PC, "Comparison of top charged and stamp charged coke making by-products in Jenkner apparatus", Tata Search 2008, pp 127-131.
89. **Banerjee, PK**; Rai, Satish K; China, M; Dhar, GS and Baijal, AD, "Beneficiation study of Iron ore slimes at Tata Steel: A proposal", Tata Search, 2007, pp 83-86.
90. Singh, Alok K; **Banerjee, PK** and Ojha, AK, "Liberation characteristics of a typical medium coking coal from West Bokaro coalfield, Jharkhand, India", Tata Search, 2007, pp 45-52
91. Singh, Alok K; **Banerjee, PK** and Ojha, AK, "Comparative study of the characteristics of coals from seam VIII QA and seam VIII SEB, West Bokaro and their behaviour during beneficiation", Tata Search, 2007, pp 57-61
92. Rai Satish K; Mukherjee, AK; **Banerjee, PK** and Thomas, MC, "Beneficiation of Noamundi iron ore fines – a case study for alumina reduction", Tata Search, 2007, pp 79-82
93. Gupta, Ashiwani Kumar; **Banerjee, PK** and Mishra, Arun, "How flotation process variables affect the selectivity of fine coal", Tata Search, 2007, pp 37-43
94. Chakraborty, D, Singh, AK, Gupta, AK, **Banerjee, PK** and Singh, NP, "Study of Floatability and washability characteristics of three typical Indian prime coking coals of Jharia coal field", Tata Search, 2006, pp 71-76
95. **Banerjee, PK**, Sripriya, R and Narasimha, M, "Application of Computational Fluid Dynamics (CFD) Technique in Mineral Beneficiation: Few Case Studies", Tata Search, 2006, pp 41-46
96. Gupta, AK, **Banerjee, PK**, Mishra, Arun, Satish P and Pradip, "Characterization of frothers using foam stability, bubble size and surface tension measurements", Tata Search, 2006, pp 89-95
97. Sharma, R, Krishna, SH, Dash, PS, **Banerjee, PK** and Choudhary AK, "Effect of quenching Conditions on Coke Strength and Fissure Formation", Tata Search, 2006, pp 97-101.
98. **Banerjee, PK**, Narasimha, M, Rao, SM, Rai, SK, China, M, Upadhyay, RK, Dhar, GS and Baijal, AD, "Beneficiation characteristics of low grade flaky iron ore", Tata Search, 2005, pp 31-37.
99. Das, Arijit, Gupta, AK, Dash, PS, **Banerjee, PK**, Dutta, Atanu and Misra, AK, "Improvement of fine coal dewatering process at West Bokaro washery through reagent application", Tata Search, 2005, pp 55-62.
100. Sharma, R; Dash, PS, Chakraborty, D, **Banerjee, PK** and Kumar, D, Prediction of coke strength from textural analysis of stamp charged coke supported by coal petrography, Tata Search, 2005, pp 81-87.
101. Dash, PS, Guha, M, Chakraborty, D, Krishnan, SH and **Banerjee, PK**, "Application of various techniques for predicting coke CSR from coal blend properties through laboratory scale experiments", Tata Search, 2005, pp 89-100.
102. Rai, SK, Sripriya, R and **Banerjee, PK**, "Life cycle assessment for steel industry – recent studies", Tata Search, 2005, pp 221-228.
103. **Banerjee, PK**, Gupta, AK, Mukherjee, AK, Das, P, Singh, NP and Baijal, AD, "Improvement of flotation performance at Bhelatand coal washery", Tata Search, 2004, pp 19-25.
104. Mukherjee, AK, **Banerjee, PK**, Bhatnagar, AK, Dutta, A and Prasad, S, "Strategy to improve fine clean coal yield at West Bokaro", Tata Search, 2003, pp 57-66.
105. Rao, S Mohan, Rao, MVS, **Banerjee, PK** and Singh Anand "Washability characteristics of lower Gondwana coals of West Bokaro", Journal of Mines, Metals & Fuels, 2003, pp 45-49
106. **Banerjee, PK**, Singh, BK, Kumar, Ashok and Mukherjee, T, "Techno-economic model for optimization of ash in clean coal at Tata Steel", Journal of Mines, Metals & Fuels, Jan-Feb issue, 2002, pp 67-71.
107. **Banerjee, PK**, Sripriya, R, Rao PVT, Mohanty, ON and Bapat, JP, "Coal washing at Tata Steel – some R&D Efforts", Journal of Mines, Metals & Fuels, Jan-Feb issue, 2002, pp 101-106.

108. **Banerjee, PK**, Singh, BK, Kumar, Ashok and Mukherjee, T, “Techno-economic model for strategic sourcing of coal”, Tata Search, 2002, pp 89-94.
109. **Banerjee, PK**; Dutta, A; Biswal, S K; Reddy, P S R and Rao, PVT “Recovery of carbon values from Washery tailings using column flotation,” Tata Search, 2001, pp 71-76.
110. Sripriya, R; **Banerjee, PK**; Rao PVT; Dutta, A; Rao, M V S “Optimisation of yield in West Bokaro Washery II, Tata Search, 2001, pp 77-82.
111. **Banerjee, PK**; Rao PVT; Singh, B P and Besra L, “Dewatering characteristics of Joda Iron ore slimes,” Tata Search, 2000, pp 7-12.
112. **Banerjee, PK**; Chakarborty, D S; Roy Choudhury, B, Rao PVT and D’Souza, D C, “Chemically Enhanced coal Dewatering: Studies at Tata Steel”, Tata Search, 1999, pp 7-12.
113. **Banerjee, PK**; S Mohan Rao; R Sripriya, Sonal Arora, P V T Rao, A K Mazumdar and V R Kochhar, “A new strategy for Beneficiation of Jamadoba Group of Prime Coking coals”, Tata Search, 1998, pp 17- 24.
114. Sivakumar, S; Kapur, P C; Pradip; **Banerjee, PK**; Rao, N D and Gupta, S S, “Modelling and Simulation of Chrome Ore Grinding Circuit at Sukinda”, Tata Search, 1998, pp 77- 84.
115. Sripriya, R; **Banerjee, PK** and P V T Rao, “Novel Flotation Devices- A Boon for Mineral Engineers, IE (I) Journal- CH, Vol 78, March 1998, pp 32- 35.
116. Mukherjee, T; Das, A K and **Banerjee, PK**, “Raw Material Engineering: Experience at Tata Steel”, Minerals & Metals Review, May 1997, pp 71- 76.
117. Mukherjee, T; Das, A K and **Banerjee, PK**, “Raw Material Engineering: Experience at Tata Steel”, Steel Scenario, Vol 6/Q4, April- June 1997, pp 32-40.

CONTRIBUTIONS IN BOOK/ MONOGRAPH

1. **Banerjee, PK**, “Opportunities for import coal substitution for the Indian Steel Industry”, BOOK titled “Metallurgical Coke making in India – 2025” (eds: Tarun Chatterjee & Debjani Nag), Steel Tech, 2025
2. **Banerjee, PK**, Amol U Mankar and Vivek Kumar, “Bauxite Ore Beneficiation”, Mineral Processing: Beneficiation Operations and Process Optimization through Modeling” (eds. Ch VGK Murty and Rajendran Sripriya), Elsevier Science Publishing Co Inc, 20 January 2023, pp 117-166.
3. Sachidanand, N N, Denys, Mark and **Banerjee, PK** (Eds), “Pathfinders of Excellence – 75 years of research at Tata Steel, R&D and SS Division, Tata Steel, 2012
4. Narasimha M, Brennan, MS, Holtham, PN and **Banerjee, PK**, “Prediction of Magnetite Segregation and Coal Partitioning In Dense Medium Cyclone Using Computational Fluid Dynamics Technique”, Computational Fluid Dynamics (ed.: Hyoung Woo OH), January 2010, INTECH, Croatia, pp 267-284
5. **Banerjee, PK**; Krishnan, SH and Baijal, AD, “Coal blends for stamp charging technology”, Glimpses of Recent advances in Iron and Steel (eds. Bhattacharjee, Debashish and Dutta, Monojit), Tata McGraw-Hill Publishing Company Ltd, New Delhi, 2007, pp 21-39
6. **Banerjee, PK**, Chapter on “Coal reserves of Tata Steel”. Monograph on “Coal and Coke at Tata Steel”, (eds Chatterjee, Amit and Rao, PVT), R&D Division, Tata Steel, 1992.
7. **Banerjee, PK**, Chapter on “Coal washing at Tata Steel- Past, Present and Future”, Monograph on “Coal and Coke at Tata Steel”, (eds Chatterjee, Amit and Rao, PVT), R&D Division, Tata Steel, 1992.

PATENTS GRANTED

1. Pinakpani Biswas, Vimal Kumar Chandaliya, **Pradip Kumar Banerjee**, Method of recovery of organic solvents required in refining of coal, Patent number: 9815026, Filed: July 6, 2009, Date of Patent: November 14, 2017
2. Narasimha Mangadoddy, **Pradip Kumar Banerjee**, Debashish Bhattacharjee, T. Mukherjee, Peter Holtham, Matthew Brennan, Cyclone for dense medium separation, Patent number: 9579666, Filed: December 18, 2007, Date of Patent: February 28, 2017
3. Vimal Kumar Chandaliya, Pinakpani Biswas, **Pradip Kumar Banerjee**, Process for production of low ash clean coal from high ash coal with total solvent recovery, Patent number: 9441175, Filed: September 4, 2012, Date of Patent: September 13, 2016
4. Kumar Chandaliya Vimal, **P. K Banerjee**, D. K Sharma, Process flow sheet for pre-treatment of high ash coal to produce clean coal, Patent number: 9321028, Filed: September 4, 2012, Date of Patent: April 26, 2016
5. Pratik Swarup Dash, **Pradip Kumar Banerjee**, Debashish Bhattacharjee, Tridibesh Mukherjee, Saibal Ganguly, Beneficiation process to produce low ash clean coal from high ash coals, Patent number: 8647400, Filed: June 5, 2009, Date of Patent: February 11, 2014
6. Ashiwani K. Gupta, **Pradip Kumar Banerjee**, Debashish Bhattacharjee, Blended frother for producing low ash content clean coal through flotation, Patent number: 8469197, Filed: August 19, 2008, Date of Patent: June 25, 2013
7. Pinakpani Biswas, Vimal Kumar Chandaliya, **Pradip Kumar Banerjee**, Development of a techno-economic process for organo refining of coal, Patent number: 8262751, Filed: June 5, 2009, Date of Patent: September 11, 2012
8. VK Chandaliya, P Biswas, **PK Banerjee**, Process for production of low ash clean coal from high ash coal with total solvent recovery, US Patent 9,441,175, 2016
9. P Biswas, VK Chandaliya, **PK Banerjee**, Development of a techno-economic process for organo refining of coal, US Patent 8,262,751, 2012
10. P Biswas, VK Chandaliya, **PK Banerjee**, Method of recovery of organic solvents required in refining of coal, US Patent 9,815,026, 2017
11. PP Biswas, Vimal Kr. Chandaliya, **P K Banerjee**, An improved way to produce low ash clean coal from high ash coal with total solvent recovery, Granted CN 103781885 JP5827753 NZ623465, US 14/344,237, 2016
12. Vimal Kr Chandaliya, PP Biswas, **PK Banerjee**, A new design concept of Organo refining process of coal, Granted – 262936, 2014
13. VKR Chandaliya, PP Biswas, **PK Banerjee**, System and a Process to Produce Low Ash Clean Coal from High Ash Coal, US Patent App. 14/130,818, 2014

14. Vimal KR. Chandaliya, Pinak Pani Biswas, **PK Banerjee**, System and a Process to Produce Low Ash Clean Coal from High Ash Coal, Publication number: 20140245659, Filed: September 1, 2011, Publication date: September 4, 2014
15. Sontosh Kumar Sriramoju, Ravi Kumar Lingam, Suresh Kumar, Pratik Swarup Dash, **Pradip Kumar Banerjee**, A process for treating spent acid for removal of impurities consisting of silica alumina and iron bearing compounds generated during leaching method of coal with hydrochloric acid, Patent No 670/KOL/2010, Publication Date : 02/09/2016
16. Pinakpani Biswas, **Pradip Kumar Banerjee**, Vimal Kumar Chandaliya, A fabrication process to produce defect-free inorganic ultra filtration range ceramic membrane device, Patent No 725/KOL/2010, Publication Date : 02/09/2016
17. Arya Bhattacharya, **Pradip kumar Banerjee**, K Rajasekar, I Sierevogel, An advance alarming system for longitudinal facial cracks at corner, predicting, prior to formation, of cracks that lead to breakouts in thin slab continuous casting, Patent No: 773/KOL/2011, dated 07.06.2011.
18. Biswas, Pinakpani, Chandaliya, Vimal Kumar and **Banerjee, PK**, "A techno economic process design for organo refining of coal", Application no: 1581/KOL/08, 12.09.08, 2008. Notice of Grant in China.
19. Dash P.S., **Banerjee PK.**, Bhattacharjee D. and Ganguly S., "Development of a process flow sheet for a novel beneficiation process to produce low ash clean coal from high ash Indian coals", Application No.: 1518/KOL/08, Dt. 03.09.08, 2008. Patent no 254881, dt 04.01.13, Patents No 183/2010, dt 23.02.2011 (Mozambique), and 2010/02191, dt 29.06.2011(South Africa).
20. Dash P.S., Lingam R.K., Sriramoju S.K., Suresh A., **Banerjee PK.**, Bhattacharjee D. and Ganguly S., "A new bench scale reactor with data acquisition and control system for chemical leaching of minerals at high pressure", Application No.: 1550/KOL/08, Dt. 08.09.08, 2008. Patent no 254741, dt 13.12.12
21. Gupta, AK and **Banerjee, PK**, "A novel technique for improvement of coal flotation process", Application No: 151/KOL/08, dt 25.01.08, 2008. Patent no 249688, dt 04.11.11.
22. Dash, Pratik swarup; **Banerjee, PK**; Bhattacharjee, Debashish; Mukherjee, T and Ganguly, S "A bench scale unit with data acquisition and control system for chemical leaching of minerals", Application no: 1391/KOL/08, dt 18.08.08, 2008. Patent no 251600, 30.03.12
23. Dash P.S., **Banerjee PK.**, Bhattacharjee D. and Mukherjee T., "A process to produce low ash clean coal from high ash coal / non coking coals for metallurgical and thermal applications", Application No.: 1072/KOL/07, dt. 01.08.07, 2007. Patent no 249940, dt 25.11.11.
24. Narasimha, M; Holtham, PN; Brennan, MS, **Banerjee, PK**, Bhattacharjee, Debashish and Mukherjee, T, "Cyclone for dense medium separation", Application No: 1134/KOL/07 & PCT/IN07/00584, dt. 16.08.07, 2007. Accepted in Australia on 12 June 2013.
25. Gupta, AK; **Banerjee, PK** and Bhattacharjee Debashish, "Blended frother for producing low ash content clean coal through flotation", Application no: 621/KOL/07, dt 20.04.07, 2007. Patent no 35727 dt 22.12.2010 (in Mozambique). US Patent no 8469179B2, dt 25.06.13, Accepted in Australia on 19th August, 2013.

26. **Banerjee, PK**, China, Mitali, Saha, RK and Chakraborty, S, "Novel dry beneficiation technique for iron ore fines (-1mm) using Circulating Fluidized Bed (CFB)", Application no: 1271/KOL/06, dt 24.11.06, 2006, Patent No 245119, 03.01.2011.
27. Gupta, AK and **Banerjee PK**, "A process for preparation of a selective and powerful mixed frother for coal flotation", Application no: 907/KOL/06, 07.09.06, 2006. Patent No 253542, dt 30.07.2012.
28. Dash P.S., Krishnan S.H., Sharma R., **Banerjee P.K.**, Haldar S.K. and Sarkar P., "A method of making stable stamped coal, coke and coal cake produced thereof to produce coke", Application No. 601/KOL/06, Dt. 16.06.06, 2006. Patent No 235325, 07.05.2010.