CURRICULUM VITAE

NAME AND DESIGNATION:

Basanta Kumar Prusty, Ph.D. (SIUC, USA)
Associate Professor
Department of Mining Engineering
Indian Institute of Technology
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Date of Birth: 31-07-1973

Gender (M/F/T): Male

EDUCATIONAL QUALIFICATION

Examination passed	**Board/ University**	**Marks secured**	**Class**	**Year of passing**
PhD	SIU Carbondale, USA	-	-	2005
M.Tech (Env. Sc. & Engg.)	I. S.M., Dhanbad	4.37/5.00 (OGPA)	First (Dist.)	1997
B.E.(Mining)	R.E.C., Rourkela	75.6 %	First (Hons)	1995
+2 Science	C.H.S.E, Orissa	68.7 %	First	1990
H.S.C.	B.O.S.E., Orissa	89.4 %	First	1988

DISSERTATION TITLE

Sorption Behavior of Coal for Enhanced Gas Recovery and Carbon Sequestration

Guide name: Prof. S. Harpalani, Department of Mining and Mineral resources Engineering, Southern Illinois University Carbondale, USA

PROFESSIONAL EXPERIENCE

- More than 3 year of teaching experience as an Associate Professor at IIT Kharagpur.
- More than 7 year of teaching experience as an Assistant Professor at IIT Kharagpur.
- More than 12 years of research experience as a scientist and researcher at CIMFR Dhanbad in the field of Coal bed methane, CO_2 sequestration.
- 4 years research experience as a Graduate Research Assistant in Southern Illinois University Carbondale, USA in the field of Enhanced Coal bed Methane Recovery and Carbon Dioxide Sequestration.

STUDENT GUIDANCE

Sl. No.	Name of the student	Proposal/ Dissertation/Thesis title	Year
Post-Doctoral Fellow (Certificate of excellence in Research)			
1.	Vamsi Krishna Kudapa	Investigation of flow of sorbing gas through coal through experimental and simulation Studies	2019-
2.	Annapurna Boruah	Adsorption and pore characterization of Indian Gas shales.	2019-
PhD			
1	Sneha Gautam	Dispersion of particulate pollutants from deep open cast mines	Completed
2.	Sneha Rani	Adsorption Characterisation of Coals and Shales from Gondwana Basin	Completed
3.	Tuli Bakshi	“Effect of shale composition and pore structure on gas adsorption potential - Gondwana and	Completed
4.	Parama Mukherjee	Porosity Studies of selected Indian Gas Shales	In progress
5.	Turlapati Venkata Yasaswy	Flow and Sorption behavior of Selected Indian Gas Shales	In progress
6.	Palash Ghosh	H_2 sorption behavior on clay minerals from India	In progress

Summer Intern Students (International)

Sl.No.	Name of the Student	Name of the Institute; Department	Project Title	Duration
1	Hayden Raps	Texas A& M University		May- July 2018

RESEARCH PROJECTS

Year 2009 Onwards (at IIT Kharagpur)

1. Underground coal gasification and its process optimization for sub-bituminous coals of India by a laboratory study. Funded by IIT Kharagpur.
2. Assessment of sealed off areas at Moonidih mine, India. Funded by SIU Carbondale and USEPA.
3. An investigation on adsorption characteristics of Indian coals and to ascertain recoverability of CBM from deep seated coal and lignite resources. Funded by Coal India Limited.
4. National Mission Project on Education through ICT - "Developing suitable pedagogical methods for various classes, intellectual calibers and research in e-learning"- Involved as a reviewer for Development of web based course in Mining Engineering. Subject: Mine Ventilation
5. Greenhouse Gas Recovery from coal mines and unmineable coalbeds and conservation to energy. (European Union, Rs. 1.16 Crore) PI: Dr. K. Pathak ; CO-PIs: Dr. B. K. Prusty.
6. CO_2 Sequestration in Abandoned Coal Mines - A Feasibility Study. Funded by DST, Government of India.
7. Effect of pore structure of Indian gas shales on its methane and CO_2 adsorption behavior; Funded by ONGC.

Year: 2005 -2008 (At CIMFR, Dhanbad)

8. Desorption and Adsorption Characteristics of Coal Seams for Resource Evaluation of Coalbed Methane in Block BS(3)-CBM-2003/II, Barmer-Sanchor Basin, North Gujarat; sponsored by ONGC.
9. Desorption and Adsorption Characteristics of Coal Seams for Resource Evaluation of Coalbed Methane; sponsored by ONGC.
10. Gas Desorption and Adsorption Studies for Resource Evaluation of Shale/ Lignite Gas in Different Selected Sedimentary Horizons of India; sponsored by ONGC.

11. Methane Adsorption and Permeability Studies of Coal and Lignite Core Samples in Connection with CBM Base Line Data Generation During Exploration Programme of Coal Wing In XI Plan Period.; Sponsored By GSI, Kolkata.
12. Studies on Adsorption and Petro-Physical Properties of Coal/Rock Samples and Advice on CBM Characteristics of Coal Seams in Raniganj East Block of Essar Oil Limited, West Bengal; Sponsored By Essar Oil Limited, Durgapur.
13. Investigation on Gas/Liquid Permeability of Rock Core Samples at UCIL Mine; Sponsored by UCIL, Jaduguda.
14. Determination of Degree of Gassiness of Belgaon Underground Coal Seam of Sunflag Iron and Steel Company Ltd., Chandrapur.; Sponsored by Sunflag Iron and Steel Company Ltd., Nagpur.
15. Investigation on Methane Emission and Associated gas Hazards at IX-Seam, 6 & 7 Pits and Digwadih collieries of Tata Steel Limited for Categorisation of Degree of Gassiness; sponsored by TISCO, Jamadoba.
16. Development of Country Specific Emission Factor Due to Venting and Flaring and Preparation of GHG Emission Estimates for The Period 1995 to 2007 Associated to Fugitive Emission from Coal and Oil and Natural Gas System; sponsored by MoEF.
17. Coalbed Methane Resource Assessment at Raniganj Coalfield; sponsored by Great Eastern Energy Corporation Limited (GEECL), Kolkata.
18. Resource Potential Evaluation of CBM of at Kapasdanga-Bharkata Sector, Birbhum Coalfield, West Bengal; sponsored by Geological Survey of India.
19. Resource Potential Evaluation of CBM of Virgin Coal/lignite Blocks throughout the Country (Wardha valley, Sanchor-Barmer basin, Jharia coalfield, Raniganj coalfield, and South Karanpura coalfield); sponsored by ONGC.
20. Gas Desorption/Adsorption Characteristics of Coal Seams and Other Related Parameters for Evaluation of CBM Resource Potential in Virgin Coal Blocks in Different Coalfields (Talcher, Neyveli, and Hardoli) in India; sponsored by CMPDIL.
21. Capacity Development for Exploitation and Utilisation of Coalbed Methane at Moonidih and Sudamdih Collieries, BCCL; funded by UNDP, GEF and GoI.
22. Maximum Desorbable Gas Content of Coals in Various Mines of Singareni Collieries Company Limited; sponsored by SCCL.
23. Determination of Degree of Gassiness of Bhatdih Colliery; sponsored by BCCL.
24. Determination of Maximum Desorbable Gas Content of Coal and Degree of Gassiness of Incline 21 Mine, Yellandu Area; sponsored by SCCL.
25. Determination of Maximum Desorbable Gas Content of Coal and Degree of Gassiness of GDK 10 Mine, Ramagundam Area; sponsored by SCCL.

26. Advice on Methane Emission and Associated Gas Hazard at VII and VIII Seams, Bagdigi Colliery for Categorization of Degree of Gassiness; sponsored by BCCL.
27. Advice on Methane Emission and Associated Gas Hazard at Damoda Colliery for Categorization of Degree of Gassiness; sponsored by BCCL.
28. Methane Emission Study for Reclassifying the Degree of Gassiness of Thick Seam at PK No. 1 Incline Mine of Manuguru Area; sponsored by SCCL.
29. Quantification of Ventilation Air Methane at Moonidih and Chinakuri Mines; sponsored by United States Environmental Protection Agency (USEPA).
30. Gas Desorptio/Adsorption Characteristics of Coal Seams and Other Related Parameters for Evaluation of CBM Resource Potential in Virgin Coal Blocks; sponsored by Mineral Exploration Corporation Limited.
31. Determination of Degree of Gassiness of Digwadih Colliery; sponsored by TISCO.
32. Determination of Maximum Desorbable Gas Content and Degree of Gassiness of Anjan Hill Mine, Chririmiri Area; sponsored by SECL.
33. Methane Emission Study for Reclassifying the Degree of Gassiness of Thick Seam at PK No. 1 Incline Mine of Manuguru Area; sponsored by SCCL.
34. Gas Desorption /Adsorption Characteristics of Coal Seams and Other Related Parameters for Evaluation of CBM Resource Potential in Virgin Coal Blocks in Different Coalfields (Talcher, Neyveli, and Hardoli) in India; sponsored by CMPDIL.

Year: 2002-2005 (At SIUC, USA)

35. Laboratory Study of Enhanced Methane Recovery and Carbon Sequestration by Carbon Dioxide Injection to Coalbed Methane Reservoir: Sponsored by DOE, USA. Viability of CO2 Sequestration and Methane Production in Illinois Coal; sponsored by Illinois Clean Coal Institute.
36. Gas Flow Characterization of Illinois Coals; sponsored by Illinois Clean Coal Institute.
37. Sorption Characterization of Indiana Coals: sponsored by Indiana Geological Survey.

Year: 1997-2002 (At CMRI, Dhanbad)

38. Environmental Monitoring in Mahanadi Coalfields, Orissa; sponsored by MCL.
39. Regional Environmental Impact Assessment & Environmental Management Plan of Dempo Mining Area, Goa.
40. Environmental Monitoring of Dempo Mining Area, Goa.
41. Environmental Baseline Data Generation for Utkal B1 Block, Talcher.
42. Environmental Study for Tara (East & West) Captive Mine Block, EMTA Bengal.

43. Environmental Impact Assessment & Environmental Management Plan for Bicholim Iron Ore Mine, Dempo Mining Corporation, Goa.
44. Bio-Reclamation of Ash Pond at Ramagundam through Vegetation for Reducing Dust Hazard.
45. Environmental Impact Assessment & Environmental Management Plan of Brahmadiha Opencast Coal Mine, Giridih, Jharkhand.
46. Development of Fly Ash Based Cement Grouts for Cable Bolting in Under Ground Mines.
47. Environmental Management Capacity Building: Technical Assistance Project - Mining Sub-component funded by Ministry of Environment & Forest and World Bank.
48. Determination of Coal Barrier Thickness along Unapproachable Water Logged Area in Khottadih Underground Coal Mine, ECL.

PUBLICATIONS

National / International Journals

1. Rani, S., Padmanabhan, E., Bakshi, T., Prusty, B.K., Pal, S. K. (2019), CO_2 sorption and rate characteristics in micropores of shales; accepted for Publication in Journal of Natural Gas Science and Engineering, https://doi.org/10.1016/j.jngse.2019.102903
2. Rani S., Padmanabhan E., Prusty B. K., (2019), Review of gas adsorption in shales for enhanced methane recovery and CO_2 storage by Journal of Petroleum Science and Engineering, 175 Page: 634-643.
3. Rani S., Prusty B. K., Padmanabhan E., Pal S. K. (2019), Applicability of various adsorption isotherm models on adsorption of methane and CO2 on Indian shales, Environmental Progress & Sustainable Energy. https://doi.org/10.1002/ep.13222
4. Rani, S., Prusty, B.K. and Pal, S.K., *Adsorption kinetics and diffusion modeling of CH_4 and CO_2 in Indian shales,* Fuel,volume-216, No. 61-70 (2018)
5. Bakshi, T., Prusty, B.K., Pathak, K. and Pal, S.K., *Pore characteristics of Damodar valley shale and their effect on gas storage potential*, Journal of Petroleum Science and Engineering, Vol.162, No. 725-735, (2018)
6. Bakshi, T., Prusty, B.K., Pathak, K., Nayak, B.R., Mani, D. and Pal, S.K., *Source rock characteristics and pore characterization of Indian shales,* Journal of Natural Gas Science and Engineering, volume-45, No. 761-770(2017)

7. Gautam, S., Prasad, N., Patra, A.K., Prusty, B.K., Singh, P., Pipal, A.S., and Saini, R *Characterization of PM 2.5 generated from opencast coal mining operations: A case study of Sonepur Bazari Opencast Project of India*, Environmental Technology & Innovation, volume-6, No. 1–10, (2016)
8. Rani, S., Prusty, B.K., and Pal, S.K., *Methane adsorption and pore characterization of Indian shale samples*, Journal of Unconventional Oil and Gas Resources. Vol.11, No. 1-10(2015)
9. Rani, S., Prusty, B.K., and Pal, S.K.,*Comparison of void volume for volumetric adsorption studieson shales from India*, Journal of Natural Gas Science and Engineering,Vol.26, No. 725 -729(2015)
10. Gautam, S., Prusty, B. K., Patra, A. K, *Dispersion of respirable particles from the workplace in opencast iron ore mines*, Environmental Technology and Innovation, Vol-4, No.137-149(2015)
11. B K Prusty, S Rani, S K Pal and A K Patra ,*"Gas shale as a source of energy - an overview" ,* Journal of Mines, Metals & Fuels. (2014)
12. Gautam, S., Prusty, B. K. and Patra, A. K, *Pollution due to particulate matter from mining activities*, Journal of Recycling and Sustainable Development,volume-2, No. 53-58(2012)
13. Prusty, B.K., and Patra, A.K., *Drainage and Recovery of Coal Mine Methane –The Worldwide Practice*, Institution of Engineers, accepted (2012)
14. Patra, A.K., Chowdhury, M. and Prusty, B.K, *Effect of synthesis parameters on the compressive strength of fly ash based geopolymer concrete.* , Journal of Environmental Pollution Control and Management, Vol. 3, No.1 (2011)
15. *Opencast mines: a subject to major concern for human health* By S. Gautam, A.K. Patra, B. K. Prusty, International Research Journal of Geology and Mining, 2(2), pp. 25-31 (2012)
16. Prusty, B.K., Mahapatra, S. and Patra, A.K. *Underground Coal Gasification - A Clean Energy Alternative*. Journal of Mine, Metals and Fuels, Jan (2011)
17. Patra, A.K., Chowdhury, M. and Prusty, B.K. *Effect of synthesis parameters on the compressive strength of fly ash based geopolymer concrete.* International Journal of Environmental Pollution Control and Management., accepted (2011)

18. Pal, S.K., Prusty, B.K., and Tripathy, A. *Air permeability studies of surface soils over in-situ coal seam fire-areas in Jharia coalfield. Transaction of MGMI*, communicated (2011)
19. Patra, A.K., Chowdhry, M., and Prusty, B.K. *Role of synthesis parameters on strength of fly ash based geopolymer concrete.* Transaction of MGMI, communicated (2011)
20. Prusty, B.K., and Harpalani, S.,*Utilization of ventilation air methane – feasibility study at Moonidih mine,* Journal of Mine, Metals and Fuels, June (2010)
21. Dutta, P., Harpalani, S., and Prusty, B. K. (2008). "*Modeling of CO_2 Sorption on C*oal", Fuel, Vol. 87, No. 10-11, Aug 2008.
22. Prusty B.K , *Sorption of methane and CO_2 for enhanced coalbed methane recovery and carbon dioxide sequestration*, Journal of Natural Gas Chemistry, Vol. 17, No. 1, 29-38. (2008).
23. Harpalani S., Prusty, B.K., and Dutta, P. *Methane/CO_2 Sorption Modeling For Coalbed Methane Production and CO_2 Sequestration*. Energy and Fuels, Vol. 20, No. 4, 1591-1599. (2006).
24. Gupta, P.K., Prusty, B.K., and Singh, S. *Ilmenite as Beach Placer Deposit – Case Study of Manavalakurichi, Kanyakumari*. Mine Tech, Vol. 23, No. 3, 11-14. (2002).
25. Prusty B.K. and Singh T.B. *Environmental Auditing - The Indian Scenario,* The Indian Mining & Engineering Journal, Vol. 40, No. 5&6. (2001)
26. Prusty B.K., Singh T.B. and Tewary B.K. *Utilization of Fly Ash in Reclamation of Colliery Waste – An Eco-Friendly Approach*. Mining Engineers' Journal (June, 2000)

Conferences

27. S.Mahapatra, B K Prusty, S.K. Pal, A.K. Patra, *Study of methane sorption on coals of Raniganj coalfields., Technological Challenges and Management Issues for Sustanibility of Mining Industry,* NIT Rourkela, 4-6 August (2011)
28. A. K. Patra and B. K. Prusty, *Carbon Footprint and Mining, Technological Challenges and Management Issues for Sustanibility of Mining Industry,,* NIT Rourkela, 4-6 August (2011)

29. B.K. Prusty, S. Mahaptra, S.K. Pal, and A.K. Patra, *High pressure methane adsorption study for coal and shale from Damodar valley coalfields*., 4th Asian Mining Congress, Kolkata, 29-31 January (2012)
30. A.K. Patra and B.K. Prusty, *Estimation of GHG emission potential of coal mining activities*, 4th Asian Mining Congress, Kolkata, 29-31 January (2012)
31. Prusty, B.K., Harpalani, S. and Singh, A.K. *Quantification of Ventilation Air Methane and its Utilization Potential at Moonidih Underground Coal Mine, India*, Presented in 9th International Mine Ventilation Congress, New Delhi. (2009).
32. Prusty, B.K, Singh, A.K., Singh, H. and Mendhe, V.A. "*Utilisation of Ventilation Air Methane for Generation of Energy: Potential in India"*. Accepted at International conference on "*GeoSpace Utilisation*" organized by Dept of Mining Engineering, IIT Kharagpur. (2008).
33. Singh, A.K., Prusty, B. K., Mendhe, V.A., and Sinha, A. *Coal Gasification Technology: Initiatives for Eco-Friendly Energy, National Seminar on New Mining Initiatives for Sustainable Development,* Bengal Engineering and Science University, Shibpur, 17 Nov. (2007).
34. Prusty, B. K., Singh, A.K., and Sinha, A. *Coalbed Methane as Fuel - Initiatives In India,* National Seminar on New Mining Initiatives for Sustainable Development, Bengal Engineering and Science University, Shibpur, 17 Nov. (2007).
35. Singh, A.K., Prusty, B.K., Singh, H., Mendhe, V.A., and Sinha, A. *Coalbed Methane: New Initiatives in India,* The Indian Mining and Engineering Journal, Vol. 46, No.11. (2007).
36. Prusty, B.K. (2005). *Enhanced Coalbed Methane Recovery and Carbon Sequestration in Unmineable Coal Seams – A Review.* CMRI Internal Publication.
37. Prusty, B.K. *Geological Sequestration of CO_2 – A Review*, CMRI Internal Publication. (2005).
38. Prusty B.K. and Harpalani S. *A Laboratory Study of Methane/CO2 Exchange in an Enhanced CBM Recovery Scenario.* International Coalbed Methane Conference, Tuscaloosa, Alabama, USA. (2004).

39. Prusty B.K. and Gupta P.K. *Mineral Resources of Jharkhand State – An Overview in the New Millennium, National Seminar on Environmental Issues and Waste Management in Mining and Allied Industries;* Department of Mining Engg, Regional Engg. College, Rourkela (2001)
40. Prusty B.K. *Quality of Life in Bhowra Coal Mining Area, in Tripathy D.P*. (Ed.) Envir. Media Publ., Karad. (2000)
41. Prusty B.K., Singh T.B. and Tewary B.K. *Utilization of Fly Ash in Reclamation of Colliery Waste - A Green Approach*. Int. Symp. on Clean Coal Initiatives, New Delhi. 687-692. (1999)
42. Prusty B.K, Tewary B.K and Dube A.K. *Life Cycle Assessment Analysis for Indian Mining Industry - A Clean Environment Approach*. Int. Sym. & Exhibition on Mining Challenges of the 21st Century, New Delhi. 663 - 671 (1999)
43. Saxena, N.C., Pal, A.K., Kumar, P., and Prusty, B.K. *Quality of living in two coal mining complexes in India*. Published in an International Mining Conference. (1999).

PROFESSIONAL ASSOCIATIONS

- Society of Petroleum Engineers (Member Number: 3564881)
- Institution of Engineers(India) (M-143365-7)
- Mining Engineer's Association of India (No. 1243)
- Mining, Geological and Metallurgical Institute of India (No. 9188)
- The Indian Science Congress Association (L12123)
- Society of Geo Scientists and Allied Technologists of India (No. 396)

ACADEMIC AWARDS

- Research Assistantship at Southern Illinois University Carbondale (2002-2005).
- University Grant Commission Fellowship at Indian School of Mines, Dhanbad.
- GATE fellowship, (1995-96)
- Merit Scholarship at Regional Engineering College, Rourkela (1991-95).
- Indian National Merit Scholarship, (1988).
- Indian National Rural Talent Search Scholarship, (1985).

JOURNAL REVIEW

Reviewed for many journals such as:

- AAPG Bulletin;
- Energy Exploration and Exploitation;
- Journal of Hydrogen Energy;
- Fuel;
- Energy and Fuel;
- Journal of natural gas science and engineering;
- Arabian Journal of Geosciences;
- RSC Advance;
- Industrial and Engg Chemsitry.

EDITORIAL ASSIGNMENT

Member, Editorial Board of 34th International Conferences of safety in Mines Research Institutes held at New Delhi, 7-10 Dec 2011.