

Publications

Patent Filed/Published/Granted

(i) **Title:** An integrated fluidized bed reactor system for Ammonia combustion to obtain hydrogen and power and method for the same

Name of Inventors: S. K. Das, A. Samanta, S. Sengupta, S Sen Gupta

Patent No. and Publication Date: 202331017619

Status: **Granted** Date: 15 June 2024

(ii) **Title:** Dual fluidized bed chemical looping gasification system for Hydrogen production and process of Hydrogen production therein

Name of Inventors: A. Samanta, S.K. Das, S. Sen Gupta

Patent No. and Publication Date: 202331073657, 24 November 2023

Status: Published

(iii) **Title:** A system for ammonia combustion with two-stage coupled combustor

Name of Inventors: A. Samanta, S.K. Das, S. Sen Gupta,

Patent No. and Publication Date: 202331078073, 01 Dec 2023

Status: Published

(iv) **Title:** A process for the production of Hydrogen from Aluminum waste

Name of Inventors: A. Samanta, C. J. Lad, B. Prasad, T.K. Mandal, S.K. Das, S. Sen Gupta

Patent No. and Publication Date: 202431005303, 23 February 2024

Status: Published

(v) **Title:** Synthesis method and apparatus for carbon dioxide capture using functionalized fabric cloth

Name of Inventors: A. Samanta, B. Prasad, S.K. Das, S. Sen Gupta

Patent No. and Publication Date: 202431032179, 23 April 2024

Status: Granted Date: 28.07.2025

(vi) **Title:** An adsorbent/catalyst support material from the byproduct of hydrolysis of aluminium waste or scrap and a process for the preparation thereof

Name of Inventors: A. Samanta, B. Prasad, S.K. Das, S. Sen Gupta

Patent No. and Publication Date: 202431092364, 26 November 2023

Status: Granted, Date: 29.07.2025

Selected Peer-reviewed Journals

- Chitrang Jayantibhai Lad, Babuni Prasad, Tapas Kumar Mondal, Soumyajit Sen Gupta, Sandipan Kumar Das, Arunkumar Samanta, Hydrogen Production from the Scrap Aluminium Beverage Can Chips and Valorization of Byproduct Residue for CO₂ Capture, Journal of Energy Resources Technology, Part B: Subsurface Energy and Carbon Capture, 2025 (Accepted).
- Runa Dey, Babuni Prasad, Srikanth Katta, and Arunkumar Samanta, Polyamine-functionalized 3-D Mesoporous Siliceous Foam Support for Postcombustion Carbon Dioxide Capture, Adsorption, 2025 (Accepted).
- Jaywardhan Kumar, Vinod Atmaram Mendhe, Arunkumar Samanta, Integrated Insights into CO₂ Storage, Trapping Mechanisms, and Hydrocarbon Recovery in Coal and Shale from the Damodar Valley Basin, India, Industrial & Engineering Chemistry Research, 64 (45), 21946 - 21962, 2025

- Devesh Kumar, Arunkumar Samanta, Tanmay Dutta, Comparison of a novel mini-channel design with other coolant channel designs for liquid cooling type of battery thermal management system: A numerical study. *Results in Engineering*, 28, 107768, 2025.
- B. Prasad, R. Dey, A Samanta, Facile Synthesis, Characterization, and Performance Study of a Low-Cost Structured Adsorbent for CO₂ Capture. *Industrial & Engineering Chemistry Research*, 64 (2), 1274–1285, 2025
- Roy, S. Sengupta, A. Samanta, P.V.S. Sai Likhith, S. K Das, Prospects of Energy-efficient Power Generation System with Ammonia as Hydrogen Carrier, *International Journal of Hydrogen Energy*, 71, 131-142, 2024
- A.K.Dubey, A.Samanta, P.Sarkar, V. K. Saxena, Investigations on the chemical looping with oxygen uncoupling process using Indian coal and copper oxide oxygen carrier, *Fuel*, 311, 122546, 2022.
- R. Dey, A.Samanta, Microwave-synthesized high-performance mesoporous SBA-15 silica materials for CO₂ capture, *Korean J. Chem. Eng.*, 37(11), 1951-1962, 2020.
- Agarwal, A. Samanta, B. K.Nandi, A. Mandal, Synthesis, characterization and performance studies of kaolin-fly ash-based membranes for microfiltration of oily waste water, *Journal of Petroleum Science and Engineering* 194, 107475, 2020.
- A.K.Dubey, A.Samanta, P.Sarkar, R. Dey, V. K. Saxena, Performance and kinetic evaluation of synthesized CuO/SBA-15 oxygen carrier for chemical looping with oxygen uncoupling, *Energy Technology*, 7:1900407, 2019.
- Runa Dey, Rajender Gupta, Arunkumar Samanta, Carbon dioxide capture under postcombustion conditions using amine-functionalized SBA-15: Kinetics and multicyclic performance. *Separation Science and Technology*, 53, 2683-2694, 2018.
- A.K.Dubey, A.Samanta, P.Sarkar, M.K.Karmakar, A.Mukherjee, C.Loha, M.Kumar, S.G.Sahu, V.K.Saxena, P.K.Chatterjee, Hydrodynamic characteristics in a pilot-scale cold flow model for chemical looping combustion. *Advanced Powder Technology*, 29, 1499-1506, 2018.
- A Shabani, M Rahman, D Pudasainee, A Samanta, P Sarkar and R Gupta, Evaluation of Ash-Free Coal for Chemical Looping Combustion - Part II: Thermogravimetric Multi-cycle Performance. *The Canadian Chemical Engineering*, 95, 832-633, 2017.
- A Shabani, M Rahman, D Pudasainee, A Samanta, P Sarkar and R Gupta. Evaluation of Ash-Free Coal for Chemical Looping Combustion -Part I: Thermogravimetric Single Cycle Study and the Reaction Mechanism. *The Canadian Chemical Engineering*, 95, 623-633, 2017.
- Mittal, Nikhil; Samanta, Arunkumar; Partha Sarkar; Rajender Gupta, Post-combustion CO₂ capture using N-(3-trimethoxysilylpropyl)diethylenetriamine grafted solid adsorbent, *Energy Science & Engineering*, 3, 207-220, 2015.
- M. Rahman; A. Samanta; R. Gupta, Production and Characterisation of Ash-free Coal from Low-Rank Canadian Coal by Solvent Extraction. *Fuel Processing Technology*, 115, 88-98, 2013.
- Zhao, A. Samanta, P. Sarkar, R. Gupta, Carbon Dioxide Adsorption on Amine Impregnated Mesoporous SBA-15 Sorbents: Experimental and Kinetics Study. *Industrial & Engineering Chemistry Research*, 52(19), 6480-6491, 2013.

- Samanta, A.; A. Zhao; G. K. H. Shimizu; P. Sarkar; R. Gupta, Post-Combustion CO₂ Capture Using Solid Sorbents: A Review. *Industrial & Engineering Chemistry Research*, 51(4), 1438-1463, 2012.
- S. K. Dash; A. Samanta; A. N. Samanta; S. S. Bandyopadhyay, Absorption of Carbon Dioxide in Piperazine Activated Concentrated Aqueous 2-Amino-2-Methyl-1-propanol Solvent. *Chemical Engineering Science*, 66, 3223 -3233, 2011.
- Samanta and S.S. Bandyopadhyay Absorption of Carbon Dioxide into Piperazine Activated Aqueous N-Methyldiethanolamine. *Chemical Engineering Journal*, 171, 734-741, 2011.
- S. K. Dash; A. Samanta; A. N. Samanta; S. S. Bandyopadhyay, Vapour Liquid Equilibria of Carbon Dioxide in Dilute and Concentrated Aqueous Solutions of Piperazine at Low to High Pressure. *Fluid Phase Equilibria*, 300, 145-154, 2011.
- Samanta and Bandyopadhyay, S. S. Absorption of Carbon Dioxide into Aqueous Solutions of Piperazine Activated 2-Amino-2-Methyl-1-Propanol. *Chemical Engineering Science*, 64, 1185 - 1194, 2009.
- Samanta and Bandyopadhyay, S. S. Kinetics and Modeling of Carbon Dioxide Absorption into Aqueous Solutions of Piperazine. *Chemical Engineering Science*, 62, 7312-7319, 2007.
- Samanta and Bandyopadhyay, S. S. Physical Solubility and Diffusivity of N₂O and CO₂ in Aqueous Solutions of Piperazine and (N-Methyldiethanolamine + Piperazine). *Journal of Chemical and Engineering Data*, 52, 1381- 1385, 2007.
- Samanta, A. and Bandyopadhyay, S. S. Density and Viscosity of Aqueous Solutions of Piperazine and (2-Amino-2-Methyl-1-Propanol + Piperazine) from 298 to 333 K. *Journal of Chemical and Engineering Data*, 51, 467-470, 2006.
- Samanta, A., Basu. J. K. and Kundu, G. Removal of hexavalent chromium from aqueous solution by using low-cost adsorbent. *Indian Journal of Environmental Protection*, 20 (10), 754-760, 2000.
- Samanta, A., Banerjee, T. K. and Das, S. K. Pressure losses in orifices for the flow of gas-non-Newtonian liquids. *The Canadian Journal of Chemical Engineering*, Vol. 77, June, 579-583, 1999.