

## SUMAN SAURABH

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**Research Areas:** Fracture permeability, Unconventional resources, Reservoir characterization and Rock mechanics.

### Research Capabilities

- Designing (including fabrication of parts and experimental setup) and conducting experiments for estimation of rock permeability using the steady state and transient techniques, sub-surface stress modification and rock characterization under unconstrained and constrained flow conditions.
- Designing experimental study to evaluate changes in flow and geomechanical properties of coal due to bioconversion.
- Using experimental data to model rock anisotropy, pre- and post- failure permeability model for rocks and modeling the implications of stress redistribution in early and long-term production from reservoir.
- Currently working on rock characterization under different reservoir boundary conditions.

### Education

PhD (Accelerated Doctoral Program), Engineering, Southern Illinois University Carbondale, (6/2015- present), **GPA - 4.0**

Bachelor of Technology, Mining Engineering, Indian Institute of Technology (ISM), Dhanbad, 2013 **Overall GPA - A (equivalent: 8/10)**

### Work Experience

- **Vedanta Plc. (Hindustan Zinc limited), May 2013 – September 2014** – In the capacity of Raise boring engineer (*designing location and execution of two 3.5 m raise bores of 400 m*) and ventilation engineer.
- **Orica Inc., October 2014 – May 2015** – In the capacity of Technical services expert for blasting (*for ground vibration, air overpressure control and controlled throw of blasts*) and pit design (*for maximizing productivity*).

### Publications

- **Journal Publications:**
  - Saurabh S, Harpalani S, Singh VK. Implications of stress re-distribution and rock failure with continued gas depletion in coalbed methane reservoirs. *Int J Coal Geol.* 2016, 162:183-192.
  - Saurabh S, Harpalani S. Modeling of microbial methane generation from coal and assessment of its impact on flow behavior, (under consideration, *Fuel journal*).
  - Saurabh S, Harpalani S. Stress path with depletion in coalbed methane reservoirs and stress based permeability modeling, (under consideration, *Int J Coal Geol.*).
  - Saurabh S, Harpalani S. Characterizing fabric transverse isotropy of coal matrix, (under consideration, *Géotechnique Letters*).

- Feng R, Harpalani. S, Saurabh S. Experimental investigation of in situ stress relaxation on deformation behavior and permeability variation of coalbed methane reservoirs during primary depletion, (under consideration, Transport in Porous Media).
- **Conference Publications:**
  - Saurabh, S., Harpalani, S., Singh, V.K. Implications of stress re-distribution and rock failure with continued gas depletion in unconventional reservoirs. 50<sup>th</sup> US Rock Mechanics Symposium, Houston, Texas, 2016.
  - Saurabh, S., Harpalani, S., Esling, S.P. Upscaling constitutive relationship for coal matrix for numerical simulation of permeability changes in coalbed methane reservoirs. International Conference on Geomechanics, Geo-energy and Geo-resources, Melbourne, Australia, 2016.
  - Saurabh, S., Harpalani, S., Effective stress law for microporous media - comparative case study on San Juan coal and Barnett shale. 6<sup>th</sup> Biot conference on Poromechanics, Paris, France, 2017.
  - Saurabh, S., Harpalani, S. Stress dependent permeability with post failure behavior in coalbed methane reservoirs. 51<sup>st</sup> US Rock Mechanics Symposium, San Francisco, California, 2017.

**Reviewer for Journals**

- Greenhouse Gases: Science and Technology, Publisher – Wiley. (Impact factor 1.67).
- Marine and Petroleum Geology, Publisher – Elsevier. (Impact factor 2.9).
- Chemical Engineering Research and Design, Publisher – Elsevier. (2.54).

**Teaching Assistant Experience**

- Rock mechanics lab (MNGE 431).

**References**

- Available on request

**Personal**

Single

Willing to relocate

**Hobbies**

Soccer and cooking