

## From the Indian Copper Belts to Chulhas

### Summary

The project aims to develop materials for a thermoelectric generator that will convert the waste heat from Indian *Chulhas* (cookstove) into off-grid electrical power, sufficient to drive a fan for forced air circulation and to power low-energy LED lighting and mobile devices in rural places. The target materials are related to Earth-abundant sulphide minerals, including chalcopyrite, bornite and chalcocite, substantial reserves of which exist in the Indian copper belts.

### Research Team:



PI                                      Co-PI                                      PDRA  
Prof. Anthony Powell    Dr. Paz Vaqueiro    Dr. Sahil Tippireddy

Dr. Sahil Tippireddy  
Postdoctoral Research Associate  
Department of Chemistry  
University of Reading, UK  
Email ID: s.tippireddy@reading.ac.uk

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### Key findings/learning/outcomes

- Align the development of novel semiconductors to the natural resources of India, by focusing on materials derived from copper sulphide ores
- Optimize the performance of mineral-related materials using chemical manipulation coupled with computer modelling.
- Develop chemical routes for the effective transformation of mineral samples into materials with good TE performance.
- Formulate a design for a TE generator for incorporation in a chulha to improve combustion, reduce IAP and generate useful electrical power.

### Where?

University of Reading, UK  
University of Manchester, UK  
Jawaharlal Nehru Centre for  
Advanced Scientific Research, India

### Project partners/funders

EPSRC