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## CANDIDATE'S DECLARATION

I, *Tarun Verma*, certify that the work embodied in this Ph.D. thesis is my own work carried out by me under the supervision of *Professor B. K. Shrivastva*, and Co – supervision of *Professor S. K. Sharma* for a period from January 2008 to January 2016 at Department of Mining, Indian Institute of Technology (BHU), Varanasi. The matter embodied in this Ph.D. thesis has not been submitted for the award of any other degree/diploma.

I declare that I have faithfully acknowledged, given credit to and referred to the research workers whenever their works have been cited in the text and the body of the thesis. I further certify that I have not wilfully lifted up some other's work, para, text, data, results, etc. reported in the journals, books, magazines, reports, dissertations, thesis, etc., or available at web-sites and included them in this Ph.D. thesis and cited as my own work.

Date:

Place: Varanasi

*Tarun Verma*

## CERTIFICATE FROM THE SUPERVISOR

This is to certify that the above statement made by the candidate is correct to the best of our knowledge.

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