Kinetics and Modeling of Iron-making Blast Furnace

……

Overview

The iron-making blast furnace is a complex multiphase flow reactor. Iron and steel industries consumes enormous amount of energy and contributes significantly in carbon dioxide emission. Ironmaking plant is an integral part of any steelworks which consumes about 69% energy and emits about 74% carbon dioxide (CO_2) of the total steel industries. Therefore, there have been sustainable efforts to improve the blast furnace (BF) process in order to reduce the energy consumption, CO_2 emission and to increase the production. The harsh conditions in the many parts of the furnace make direct measurements difficult. Hence, mathematical modelling based on multiphase fluid dynamics, reaction kinetics, etc. is a useful tool in obtaining insights into the BF operation. With the increase in demand of steel, especially in India, it has become imperative to run the ironmaking blast furnaces in more efficient and economical way while keep reducing the energy and CO_2 emission. One of the ways to achieve this that the operators, researchers, students, etc must keep themselves up-to-date with the development which are taking place in this important area beside having some fundamental knowledge on the subject. This course will develop a deeper understanding of core metallurgical / materials / chemical concepts involved in iron making, in particular, with respect to multi-phase flow.

Course participants will learn these topics through lectures and laboratory visit. Also, case studies and assignments will be shared to stimulate research motivation of participants.

Modules	Module: Kinetics and Modeling of Iron-making Blast Furnace : Dec. 18 – Dec. 22, 2017 **Number of participants for the course will be limited to forty.**
You Should Attend If…	- you have basic knowledge of metallurgy and transport phenomena. - you are a faculty member or industry personnel involved in R&D in the disciplines of metallurgy, chemical engineering, materials and mechanical engineering, having an interest in process metallurgy. - you are a student or teachers, scientists from the research labs or practicing engineers from industries.
Fees	The participation fees for taking the course is as follows: **Participants from abroad : US $500** **Industry/ Research Organizations: INR 20000** **Academic Institutions: INR 10000** **Student : INR 3000** The above fee includes all instructional materials, visit to laboratories. The participants will be provided with accommodation on payment basis.

The Faculty

Prof. Hiroshi Nogami is a professor in Institute of Multidisciplinary Research for Advanced Materials at Tohoku University, Sendai, Japan. His research interests are in kinetic-based mathematical modeling of iron-making blast furnace, multiphase flow, thermal fluid analysis, reaction kinetics, thermal engineering in material processes.

Govind S. Gupta is a professor in Department of Materials Engineering at Indian Institute of Science, Bangalore, India. His current research interests are in fluid flow modeling in packed beds, flow of granular materials, sintering, steelmaking and iron-making, carburization, metal-slag emulsion, manufacturing of boron and silicon carbides.

Course Co-ordinator

Prof. Govind S. Gupta
Phone: +91 80 22933240
E-mail: govind@materials.iisc.ernet.in

....

http://www.gian.iitkgp.ac.in/GREGN