

主催：グローバルCOEプログラム「構造・機能先進材料デザイン教育拠点」

講演会のご案内

日時：平成20年10月9日(木曜日) 13:00 - 16:20

場所：材料系R2棟7階セミナー室

1. 13:00 - 14:00

講演題目：Thermodynamic Modeling of Materials and Its Applications to Materials Science and Engineering

講師：Professor In-Ho Jung
Department of Mining and Materials Engineering
McGill University, Canada

2. 14:10 - 15:10

講演題目：On the role of slags in secondary metallurgy and casting of steels

講師：Professor Lauri Holappa
Department of Materials Science and Engineering
Helsinki University of Technology, Finland

3. 15:20 - 16:20

講演題目：Process models using Flow Sheet software packages

講師：Professor David Robertson
Professor Emeritus of Metallurgical Engineering,
Missouri University of Science and Technology, USA

多数の皆様のご来聴を歓迎いたします。

問合せ先：

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1. 13:00 - 14:00

**“Thermodynamic Modeling of Materials and
Its Applications to Materials Science and Engineering”**

In-Ho Jung
McGill University

Chemical processes are often difficult to understand due to their complexity. Usually, to solve practical problems and to understand the complex phenomena, a large body of experimental data must be obtained at great expense. In order to decrease the time and expense required for the experiments, and to understand the chemical reactions more fully, thermodynamic calculations based on accurate thermodynamic modeling of materials have been used actively in recent years.

In this presentation, the brief introduction of thermodynamic modeling will be given firstly. Then, the applications of thermodynamic calculations to various materials research including chemical reactions of slag/metal/inclusion, alloy design, coating, etc. will be presented.

2. 14:10 - 15:10

“On the role of slags in secondary metallurgy and casting of steels”

Lauri Holappa
Helsinki University of Technology

Active role of slags in steel refining in ladle and during casting in tundish and mould are focussed. Thermodynamic equilibrium distributions between slag and metal as well as kinetic constraints to proceed toward the equilibria and physical factors influencing the final results are discussed.

3. 15:20 - 16:20

“Process models using Flow Sheet software packages”

David Robertson
Missouri University of Science and Technology

There are now many powerful software packages available for the calculation of flow sheets of chemical plants, both steady state and dynamic. In the metallurgical field companies and academics have been slow to adopt these tools, preferring to write their process models (heat and mass balances) using typically Fortran, C++ or Excel. In comparison there has been ready acceptance of software for thermodynamic calculations - such as FACTSage and HSC. In this talk Dr. Robertson will demonstrate a number of process models developed using the METSIM software package. These include ladle refining, the AOD process, the iron blast furnace, and the production of high carbon ferro-manganese.