ICC-IMR セミナー

８月６日 (金)　(August 6, Friday) 15:00 -
金属材料研究所ＣＯＥ棟 第１セミナー室 (IMR COE seminar room #1)

現在 ICC-IMR 客員教授として滞在中のフランス国立応用科学研究所（INSA）のエピシェ教授に近年､材料学的に大きな貢献をしつつある走査型透過電子顕微鏡(Scanning Transmission Electron Microscopy, STEM) に関してご講演していただきます。対象とする系も磁性ナノ粒子、アルミニウム合金中の析出挙動、酸化物と多岐にわたっています。またエピシェ教授は東北大学と INSA-Lyon との ELyT プロジェクトも推進されており、そのような観点からもお話いただく予定です。材料系の先生方・学生のみなさんだけでなく、ICC-IMR や ELyT 等の国際連携活動にご興味をお持ちのみなさまの多数のご参加をお待ちしています。

Subtle chemical characterization of materials and nano-materials by HAADF imaging in Transmission Electron Microscopy

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High Angle Annular Dark Field imaging (HAADF) is a very efficient method to image the structure of materials down to the atomic resolution, and it is now routinely used, due to the availability of TEM-STEM instruments. Owing to the fact that the Rutherford scattered intensity varies roughly as Z^2 (where Z is the atomic number of the chemical specie of interest), imaging of microstructures can be very easy to undertake with the advantage of providing incoherent images which do not suffer the limitation of dynamic interactions as in conventional TEM imaging. According to this, the EMINA (**E**lectron **Mi**croscopy of **Na**nostructures) program in the ElyT international project (**E**ngineering **Ly**on-**T**ohoku: a joined research collaboration between the Universities of Lyon and Tohoku in Sendai) intends to focus on characterization studies of nanostructures and nano-objects using a combined application of (i) conventional and High Resolution TEM, and (ii) HAADF-STEM. Three main studies will be covered here: (1) chemical analysis of bi-metallic nanoparticles (e.g. Fe-Pd) using HAADF imaging, (2) the effect of copper on the precipitation sequence in Al-6xxx alloys (Al-Mg-Si system), (3) the analysis of rare earth dopants in luminescent YAG ceramics. Most of the results presented were obtained on FEI Titan 80-300 microscopes operating at 300kV, equipped with a C_s corrector, and mainly that located in Tohoku University.

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