

# Лекция профессора Ю.Икухара

**14 февраля 2013 года в 15 ч. 00 мин.**

в ауд. **446** химического факультета МГУ

состоится лекция

## "Atomic Structures and Chemistry of Material Interfaces"

("Атомарная структура и химия межфазных границ материалов")

Лектор - ведущий специалист в области керамических материалов и электронной микроскопии профессор Ю. Икухара (Университет Токио, Япония). Лекция организована НОЦ МГУ по нанотехнологиям, химическим факультетом и ФНМ МГУ.

Планируется лекция и последующее обсуждение.

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Авторская версия тезисов:

"Grain boundaries and interfaces of crystals have peculiar electronic structures, caused by the disorder in periodicity, providing the functional properties, which cannot be observed in a perfect crystal. In the vicinity of the grain boundaries and interfaces, dopants or impurities are often segregated, and they play a crucial role in the material properties. We call these dopants "function providing elements", which have the characteristics to change the macroscopic properties of the materials drastically. In this study, the results obtained by Cs (spherical aberration) corrected HAADF STEM are demonstrated for well-defined grain boundaries and interfaces in oxide materials. On the other hand, such materials are composed of light elements, and light elements in the GB structural units play a crucial role in the material properties. Recently we have reported that annular bright field (ABF) STEM imaging is very powerful technique to produce images showing both light and heavy element columns simultaneously. In this study, crystal structures and GB atomic structures including light elements in several oxides such as CeO<sub>2</sub>, Al<sub>2</sub>O<sub>3</sub> and lithium battery materials are directly observed by ABF STEM".

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Yuichi Ikuhara is Professor and Director of Nanotechnology Center, Institute of Engineering Innovation at University of Tokyo since 2003. He received Dr.Eng. from Department of Materials Sciences, Kyushu University. He then joined Japan Fine Ceramics Center (JFCC) in 1988, and was the Division Manager of the Microstructure Characterization Division at JFCC from 1993. In 1996, he joined University of Tokyo as an associate professor of Materials Sciences. He was a visiting assistant professor at Case Western Reserve University from 1991 to 1993. His current research interest is in interface and grain boundary phenomena, transmission electron microscopy (STEM, HREM, EDS, EELS), high-temperature ceramics, electroceramics, dislocations, bicrystal experiments, theoretical calculations, quantum device and so on. Dr.Ikuhara is author and coauthor of 450 technical papers in the field, and has more than 200 invited talks at international and domestic conferences. He has received "Humboldt Research Award" from Alexander von Humboldt Foundation (2010), "Honda Frontier Prize" from Honda Foundation (2010), "Seto Prize" from Microscopy Society of Japan (2007), "Fulrath Award (Academic)" from the American Ceramics Society (2002), "Academic Prize" from the Ceramics Society of Japan (2001), "Exploits Awards" from the Japan Institute of Metals (2001) and so on. He is a fellow of the American Ceramics Society, member of the board of directors at Microscopy Society of Japan, Japan Institute of Metals, MRS of Japan and the Ceramics Society of Japan, and an associate member of the Science Council of Japan. He holds a group leader position at JFCC and WPI professor at Tohoku University concurrently.

