

**Title**     **Hydrogen trapping sites and hydrogen embrittlement of iron and steels**



**Speaker**   Prof. Kenichi TAKAI  
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**Date & Time**   Friday, October 30, 2015     4:00 p.m.

**Place**             I<sup>2</sup>CNER Hall, Ito campus, Kyushu University

**Abstract**

To clarify the function of hydrogen in embrittlement of iron and steels, identification of hydrogen trapping sites, dynamic behavior of hydrogen during deformation, lattice defect formation enhanced by hydrogen and strain are important. I will present the relationship between atomic-level changes in iron and steels and macroscopic mechanical properties. The determination of hydrogen trapping sites such as vacancies, dislocations and grain boundaries using thermal desorption spectrometry, the interaction between dislocation and hydrogen, evaluation of strain-induced lattice defects associated with hydrogen and their relevance to hydrogen embrittlement are discussed.

**About the Speaker**

Dr. Kenichi Takai is a professor and a chairperson of Department of Engineering and Applied Science of Sophia University. His research themes are to clarify (1) hydrogen trapping sites such as vacancy, dislocation and grain boundary in metals using TDS, (2) interaction between hydrogen and dislocations, (3) method of evaluating hydrogen embrittlement susceptibility, (4) mechanism of hydrogen embrittlement and (5) method of developing high-strength steels with high-resistance to hydrogen embrittlement. He was a chief in research project of “Fundamental construction for hydrogen embrittlement” from 2009 to 2013, and is also a chief in research project of “Fundamental factors and characteristics evaluation of hydrogen embrittlement” from 2015 to 2018 in the Iron and Steel Institute of Japan.

**Host:** Professor Masanobu Kubota

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