Shuji HARADA

Professor Emeritus and Dr. Eng.
Fellow of Niigata University

Professional Expertise

He is an expert on Metal Physics. His professional expertise encompasses includes hydrogen in metal, particularly on hydride-formation mechanism, hydrogen-metal interface one, and quantum phenomena of hydrogen in metal. In addition, he and his research group developed EMF type hydrogen sensors.

Research Fields of Interest

Hydrogen storage alloys

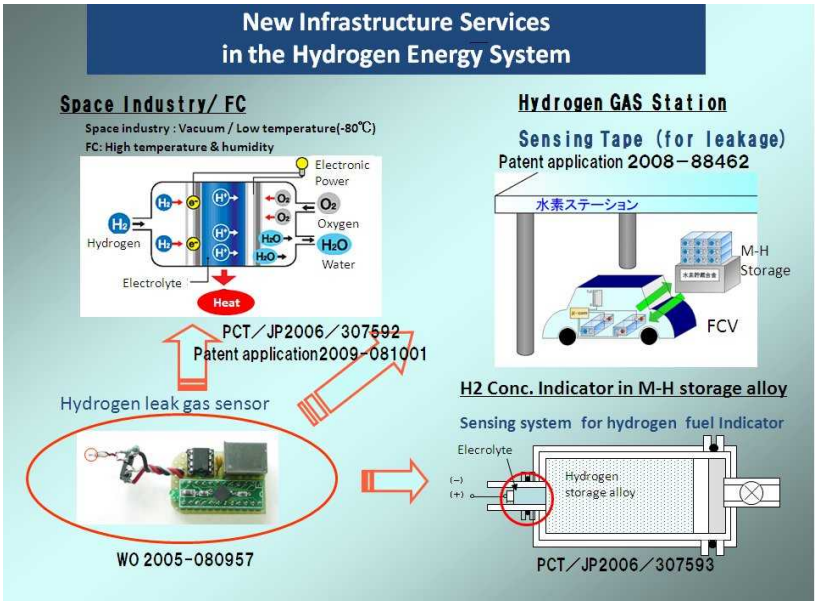
Safety is the main issue hindering adoption of hydrogen as an energy source. Hydrogen storage alloys offer an innovative solution eliminating the risk of explosion. He and His research group have been researched and developed the alloys on the basis of the hydrogen-formation mechanism.

Hydrogen sensors

He and His research group are developing various type of sensors for industrial needs as shown in the figure. The market research has been done with the technology licensing organization Niigata TLO Inc. The novelty of the sensor was mainly due to the pure research on hydrogen-metal interface physics.

Quantum phenomena of hydrogen in metal

Hydrogen atoms dissolve in Pd at higher atomic density than in solid H_2. They are known to have large diffusion coefficient due to quantum tunneling. His interest is centered in a new type of quantum macroscopic effect of the atomistic state of H in Pd by using the Torsional oscillator (TO) technique in the Kubota laboratory, ISSP, the Univ. of Tokyo.



Education

1983: Dr. Eng., Graduate School of Engineering Science, Osaka University, Japan
1978: M.S. in Physics, Graduate School of Science, Niigata University, Japan
1973: B.S. in Physics, Faculty of Science, Kanazawa University, Japan