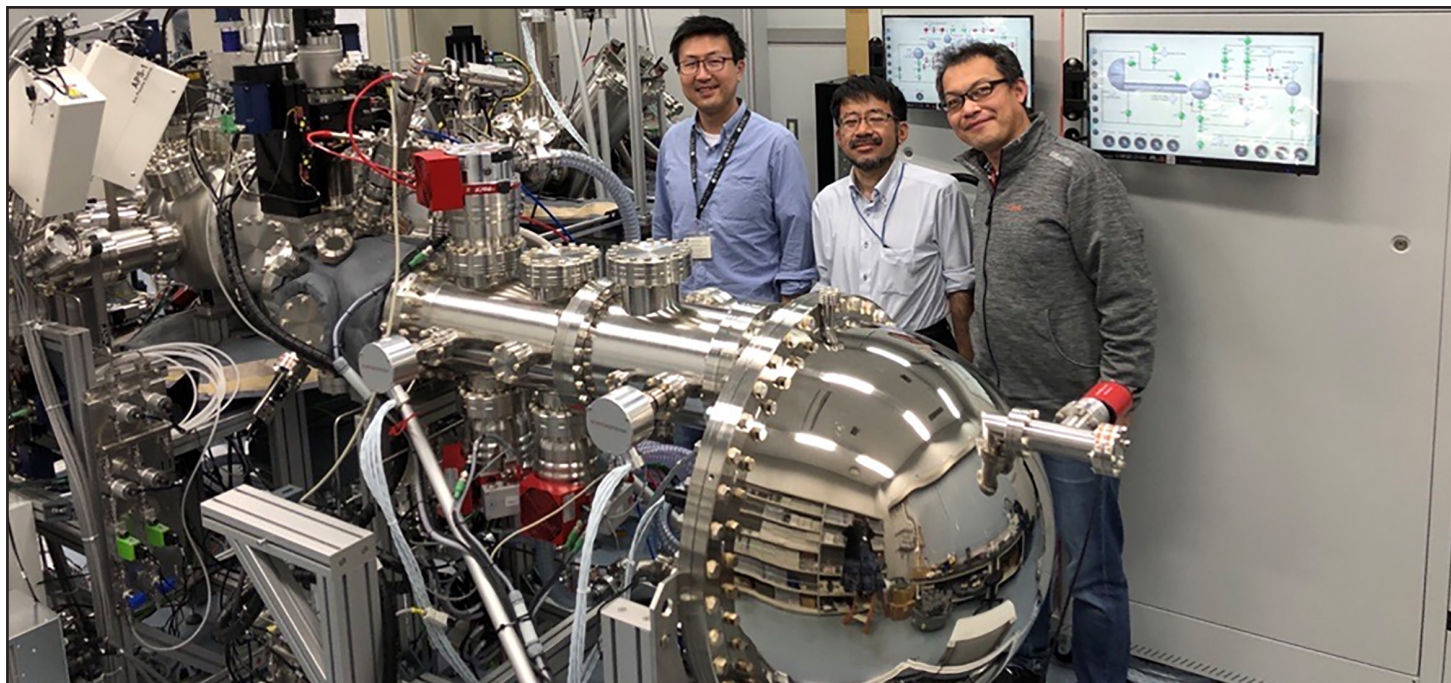


MATERIALS INNOVATION PLATFORM

APPES/XPS MIP system

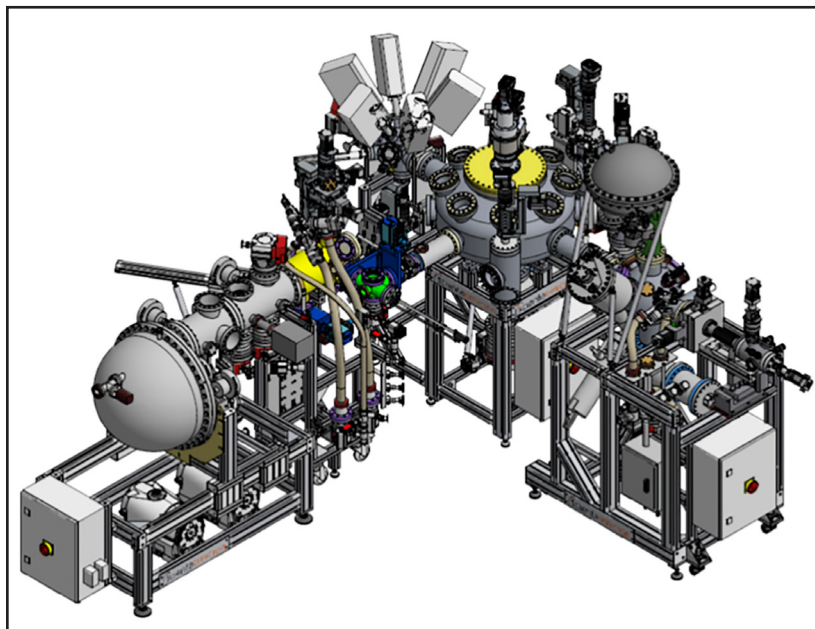


Installation photo: Dr. Tominaka (NIMS), Dr. Nakada (NIMS), Mr. Fukushima (SOKK) in front of MIP system at NIMS.

A APPES/XPS MIP system for catalyst research was successfully installed at the National Institute for Material Science (NIMS) in Japan at the end of March 2023.

Catalyst materials consist of multiple components and their performance is subject to a delicate interplay of element concentration, structure, porosity and the surrounding gasmixture. It is of utmost importance to improve the performance in a wide parameter space of temperature, gases and pressure. Dr. Tominaka and members of his group are developing a APPES/XPS system combined with AI/MI technology. Measured data of XPS/APPES on samples with different conditions will be stored in a Cloud-based data base. Dr. Tominaka's AI/MI technology in combination with Scienta Omicrons HiPLab and XPS Lab will have major impact on the usage of AI for optimizing catalyst materials and involved sample growth processes.

The system consists of an analysis chamber equipped with DA20(R) XPS/UPS/ARPES analyser, a second analysis chamber equipped with HiPP3 UPS/XPS, a sample growth chamber with arc



Schematic drawing of APPES/XPS MIP system.

plasma sources, a sample preparation chamber with a heater, and three load lock chambers. Each chamber is connected to the radial distribution chamber with a sample transfer robot. Samples are picked up from atmosphere to a load lock chamber and automatically selected and transferred to each chamber.