

HANARO Neutron Radiography Facility and Fuel Cell Research

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Fuel cell which generates electric energy from hydrogen and oxygen is one of noticed renewable energy system because this has high efficiency and free from CO₂. Especially, PEMFC (Polymer Electrolyte Membrane Fuel Cell) is focused by automotive companies because PEMFC, which has high power rate per volume and low operating temperature (60 ~ 80°C), is suited due to the compact design and short start-up time. The water management is one of the most critical issues for fuel cell commercialization. In order to make a proper scheme for water management, their formation of water distribution and behavior is very important. Neutron imaging is the best method to visualize the water at fuel cell and has been applied worldwide with qualitative and quantitative results. Because the NRF has large beam size (350×450 mm²) and relatively high neutron flux(2×10^7 n/cm²sec), it is suitable for large scale fuel cell research. Neutron imaging technique was used to investigate the water distribution and behavior in PEMFC under different operating conditions. The NRF has contributed the improvement of fuel cell performance and is one of the best choices for fuel cell study.