

## **Biography of Dr. Qinghua Liu**

Dr. Qinghua Liu is currently a professor of National Synchrotron Radiation Laboratory, University of Science and Technology of China (USTC). He received his Ph.D. in 2009 from USTC, and then did research work on renewable energy conversion and synchrotron radiation experimental techniques. His current research interests focus on the synthesis and characterizations of advanced energy functional nanomaterials for photocatalytic, electrochemical, and photoelectrochemical applications and the development of advanced *in situ/operando* synchrotron radiation experimental techniques and their applications in energy storage and reaction mechanism.

The specific research fields and achievements of Dr. Qinghua Liu are as follows,

### **(1) Development of *in-situ/operando* X-ray absorption spectroscopy methods**

Developing *in-situ/operando* X-ray absorption spectroscopy (XAFS) and infrared (IR) spectroscopy methods in order to investigate the energy conversion mechanics at the solid-liquid interface of the advanced low-dimensional energy conversion materials.

### **(2) Design of advanced low-dimensional energy conversion materials**

Designed a series of advanced low-dimensional energy conversion materials, such as NiFe-MOFs, Co-NC, Ni-NC, Au<sub>1</sub>N<sub>x</sub>, CoOOH, and TiO<sub>2</sub> based single atom, one-dimensional nanotube and/or two-dimensional nanosheet materials and greatly improved the energy conversion efficiency.

### **(3) Investigation on the energy conversion mechanisms of energy materials**

Using the developed *in-situ/operando* synchrotron characterization methods to investigate the energy conversion mechanics of the advanced energy materials.