Turning Sunlight into Clean Hydrogen Fuel: Transparent WO_3 Film Technology

With growing global concerns over energy and the environmental sustainability, scientists are actively seeking clean and renewable technologies to produce carbon-neutral fuels. One promising solution is photoelectrochemical (PEC) water splitting, a process that uses sunlight and a semiconductor material (used as photoanode and photocathode) to split water into oxygen (O_2) and hydrogen (H_2). Since 2010, when I began investigating solar water splitting by extending my expertise in nanomaterials development, my commitment to this filed has remained steadfast. In this newsletter, I would like to introduce the development of a new class of optically transparent and mesoporous tungsten trioxide (WO_3) photoanode for efficient PEC water oxidation and discuss their prospective utilization in tandem PEC water splitting devices.