

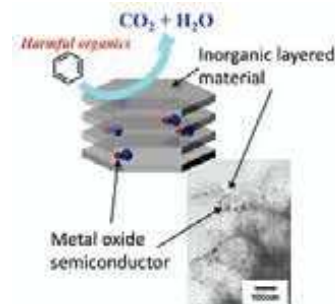


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Development of new environmental purification materials based on inorganic layered materials

Water purification is one of the important issues of the present day. Although TiO_2 is the most prevalent and practical photocatalyst for elimination of hardly decomposable organic materials, both improvement of an affinity with target materials and development of decomposition performance under visible light are required for TiO_2 materials. One of the solution methods of the former is hybridization of TiO_2 and an inorganic layered material. With this hybridization, the synergy effect of layered material and TiO_2 can improve the decomposition performance of organic materials. In this research, we will develop an environmental purification system with high efficiency and ecofriendly by preparing hybrids of various metal oxide semiconductors and inorganic layered materials.



Development of solid oxide fuel cells (SOFCs) for various types of fuels

Solid oxide fuel cells are a class of fuel cells characterized by the use of a solid oxide material (ceramic material) as the electrolyte. SOFCs use a solid oxide electrolyte to conduct negative oxygen ions from the cathode to the anode. The electrochemical oxidation of the hydrogen, carbon monoxide or other organic intermediates by oxygen ions thus occurs on the anode side. In this research, we will develop new anode materials that are compatible with the supply of methane and other organic intermediate fuels.

