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Nanocomposites for encyclopedia of bioanalytical methods for bioavailability and bioequivalence studies of pharmaceuticals

The attainment of carbon-free society and, therefore, the development of renewable energy are most significant issues in the L current days. The composite systems consisting of multiple components sometimes compensate their defects each other and/ or enhance synergistically their characteristics. In this talk, I report the fabrication of nanocomposites made from components with different properties like carbon materials, polymers and metal nanoparticles. Successively, these nanocomposites are applied to green chemistry. Cellulose nanofibers are one of typical renewable materials. Since the functionalized cellulose nanofibers are nanometer-sized, they can form fine films embedded functional materials. They were functionalized for photoinduced enzyme reaction by attaching poly (amido amine) dendrimer, photosensitizer and enzymes. As-prepared system effectively worked for CO, capture and decomposition to methanol. Thus, this system could act both for the low carbon and the solar fuel production. With the propagation of electric car, there have been challenged to the discovering of the sustainable, clean and environmentally-friendly fuels. Hereupon, hydrogen is an inspiring alternative fuel and energy carrier, being free from CO, emission. The successful attaining of hydrogen production from the electrocatalytic hydrogen evolution reaction was kept by using electrocatalyst systems containing ~1 wt% of platinum nanoparticles protected by dendrimer. Supercapacitors are one of the most talented devices for energy storage. They must exhibit many advantages, including high energy density, fast charge/discharge rate and excellent durability. Thus, we report materials of the non-faradic carbon-based electric double layer capacitors and the faradic pseudocapacitors. The obtained composites displayed a synergetic capacitance performance and excellent charge/discharge properties.

Biography

Toyoko Imae is the Honorary Chair Professor of National Taiwan University of Science and Technology, Taiwan. She has joined there immediately after retiring from Keio University, Japan. She is also a Professor Emeritus of Nagoya University, Japan, since 2006. Her recent research target is "Nanoarchitecture and Nanotechnology" towards energy, environmental and biomedical sciences. She has published 319 journal articles, 25 reviews, 20 patents, 27 book chapters and 4 edited books. She has been conferred several awards as represented by Award of Ministry of Environment. She also contributes to the academic advancement as a President of Asian Society for Colloid and Surface Science since 2013

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