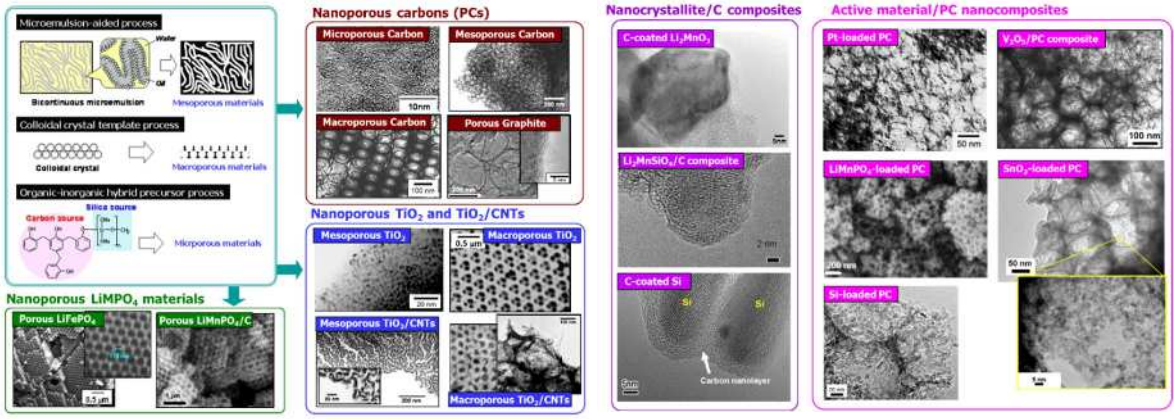
Name	Job Title	Area of Expertise
MORIGUCHI Isamu	Professor	Inorganic Materials Chemistry, Electrochemistry, Colloid & Interface Chemistry

1. Main Research Topics

Development of innovative materials and technologies that contribute to environmental conservation and efficient use of energy through the elucidation of science related to nano-interfaces and nano-spaces. The overview is shown below.

① Creation of novel functions via nano-interface and nano-space control

Synthesis of various nanoparticles, nanoporous materials and nanocomposites of carbons and metal oxides by soft chemical processes to investigate new functions such as adsorption&catalysis, charge-discharge functions and CO_2-reduction.



② Development of innovative energy storage devices

Aming for high-performance storage devices which are applicable to electric power grid-connection system, electric vehicles, energy regeneration, instantaneous power outage (low) backup, power assistance, and power tools, etc.

Development of advanced electrode materials for high performance Li- or Na-ion batteries, safe and stable all-solid-state batteries, electric double-layer capacitors, Li-ion capacitors, and other hybrid capacitors.

Recent major publications

Nat. Energy, **10**, 847 (2025); *J. Phys. Chem. C* **, 129**, 11905 (2025); *J. Mater. Chem. A*, **13**, 13962 (2025); *Carbon*, **235**, 120088 (2025); *Chem. Lett*., **53**, upae208 (2024); *Nat. Commun*., **15**, AN1708 (2024); *ACS Appl. Mater. Interfaces*, **15**, 30600 (2023); *Chem. Eng. J*., **429**, 132424 (2022); *Sci. China Tech. Sci*, **65**, 1 (2022); *ACS Appl. Energy Mater.*, **4**, 13841 (2021); *Nano Select*, **2**, 2121 (2021); *ACS Appl. Mater. Interfaces*, **12**, 43042 (2020); *J. Coll. Interface Sci.*, **552**, 412 (2019); *Sci. Rep*., **8**, AN8747 (2018); *Nanoscale*, **9**, 15643 (2017); *J. Phys. Chem. C*, **120**, 25717 (2016); *Nat. Commun*., **6**, AN6544 (2015); *Chem. Commun*., **50**, 7143(2014); *ACS Nano*, **8**, 3614(2014)

2. Keywords

Carbon neutrality, Nanotechnology, Soft chemical process, Energy storage devices, Li-ion battery, Na-ion battery, All-solid-state battery, Electric double-layer capacitor, Li-ion capacitor, Adsorption and separation, CO_2

3. Remarks and Websites

Research topics available for joint research

Development of CO_2 and other gas adsorption and separation materials, Analysis of structure and interface of nanomaterials, Development of Li-ion and Na-ion batteries as well as all-solid-state battery electrode materials, Development of EDLC and Li-ion capacitor electrode materials, etc.

researchmap： https://researchmap.jp/I.Moriguchi
Laboratory： https://www.cms.nagasaki-u.ac.jp/lab/bukka/A/top.html