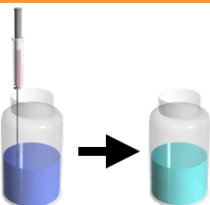


Creating nanomaterials for realizing high-performance devices

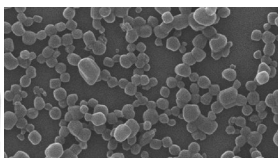
Professor Akito Masuhara

Illustration

Key technologies for nanocrystalization and functionalization

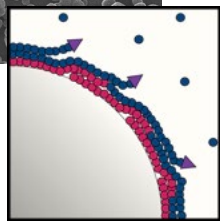


Reprecipitation method (Fig. 1)

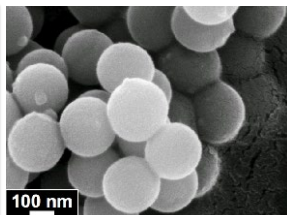


【Papers】

JJAP. **54**, 06FK05-1 (2015).
CrystEngComm. **20**, 7053 (2018).
JES. **166**, B3131 (2019).



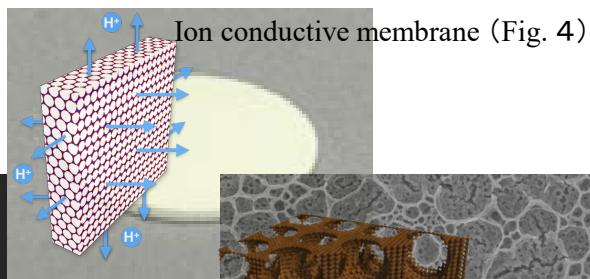
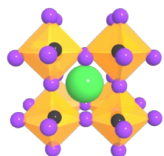
Radical polymerization with particles method (Fig. 2)



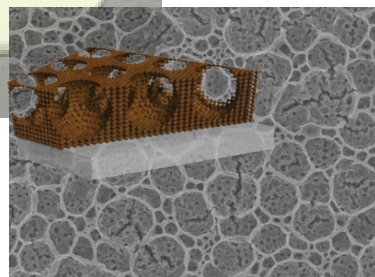
【Papers】

Chem. Lett. **47**, 9 (2018).
JJAP. **59**, S11H01 (2020).

From synthesizing nanocrystals to device fabrication and evaluation



Quantum dots (Fig. 3)



Capacitor electrode (Fig. 5)

Content:

Based on the "Reprecipitation method (Fig. 1)" developed for preparing organic nanocrystals and the "Radical polymerization with particles method (Fig. 2)" developed as a dense polymer coating on nanoparticles, we develop the organic and hybridized nanomaterials for realizing high-performance devices.

For example, we are developing quantum dots (Fig. 3), ion conductive membranes for fuel cells (Fig. 4), and capacitor electrodes (Fig. 5). We are challenging to develop high-performance devices, not only at the laboratory level, but also with practical processes.

We believe that even the smallest particles, such as nanoparticles, can be improved the device-performance by functionalized and assembled their particles.

Appealing point:

We actively accept many joint research with companies and other universities such as Hokkaido University and Tohoku University. In addition, we are also collaborating with universities in Belgium, Germany, and Austria.

Yamagata University Graduate School of Science and Engineering
Research Interest : Particle synthesis,
Polymer synthesis, Fuel cell, Quantum dots

E-mail : masuhara@yz.yamagata-u.ac.jp

Tel : +81-238-26-3891

Fax : +81-238-26-3891

HP : <http://masuhara-lab.yz.yamagata-u.ac.jp/wp/>

