

Development of Functional Clay Materials

Keywords: Functional filler, Polymer composites, Adsorbing materials, Films

Kenji Tamura

Exploring Function Field / Functional Clay Materials Group

TAMURA.Kenji@nims.go.jp | https://samurai.nims.go.jp/profiles/tamura_kenji



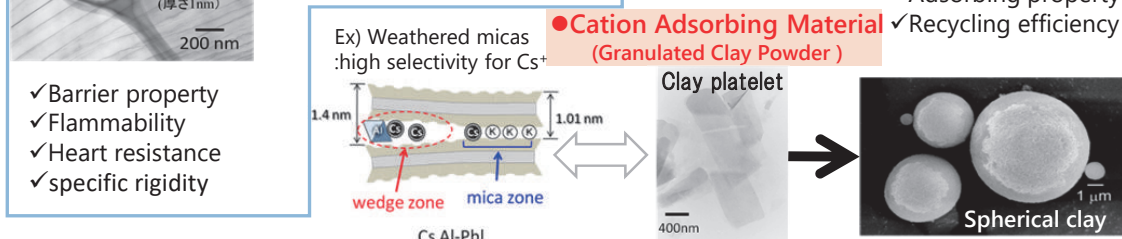
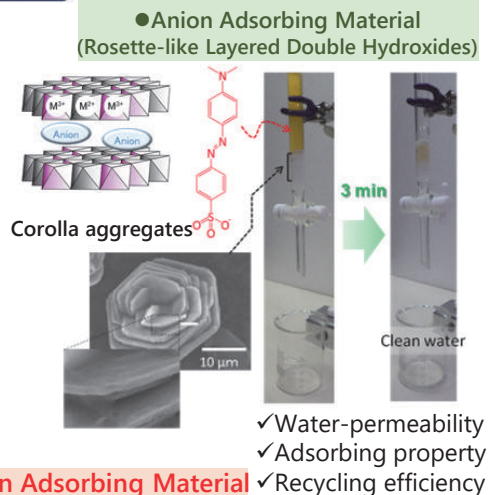
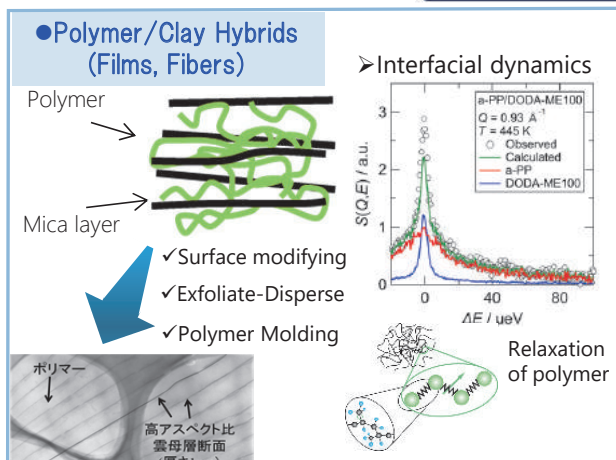
Background

- Clay minerals are superior stable, safe materials and have unique physicochemical properties: adsorption-, tribological- and shielding performance.
- Selective separation technology of harmful substances in the living environment.
- It would be possible to convert these “ubiquitous sources” into “smart materials”.

Aim

- To convert these “ubiquitous sources” into “smart materials”.
- To develop new hybrid materials by controlling the surface and interface of clay minerals
- To control adsorbent selectivity utilizing two-dimensional interlayer.

Advanced Research Topics



Publications

- Chem.Mtaer., 20(2008)2242;Appl.Clay Sci.,126(2016)107; Appl.Clay Sci., 155(2018)15.
- Phys.Chem.Chem.Phys.,17(2015)18288; Chem.Lett.,45(2016)336
- Environ.Sci.Tech.,48(2014)5808;Chem. Lett., 45(2016) 1385;J. Environ. Radioactivity, 190–191(2018) 81.

Applied area and future prospects

- Gas barrier/ Non-halogen flame retardant/Food fields
- Harmful substance adsorption/separation filter
- Tailor-made design of adsorbent: advanced selectivity

Issues for technology transfer

- To establish the technology of controlling the material properties.
- To provide environment-conscious process.
- Easily recycling technology for composite materials.