Oral/Invited

Fri. Aug 1, 2025 1:30 PM - 2:30 PM JST | Fri. Aug 1, 2025 4:30 AM - 5:30 AM UTC Room B(2F The SalonThe Grand Ballroom East)

[4B08-10] Session 9_Dr. Yoshiaki Fukushima's memorial session

Chair:Makoto Ogawa(VISTEC and Shinshu University), Tetsuji Itoh(AIST)

1:30 PM - 1:50 PM JST | 4:30 AM - 4:50 AM UTC

[4B08]

Advancing Nanomaterials Frontiers: A Tribute to Dr. Fukushima

*Shinji Inagaki[1] (1. Nagoya University (Japan))

1:50 PM - 2:10 PM JST | 4:50 AM - 5:10 AM UTC

[4B09]

Neutron scattering study on clay and polymer nano-composite

*Takeshi Yamada[1] (1. CROSS (Japan))

2:10 PM - 2:30 PM JST | 5:10 AM - 5:30 AM UTC

[4B10]

States of Guest Molecules/Molecular Assemblies in Two dimensional Nanospace

*Makoto Ogawa[1,2], Kamonnart Jaa Imwiset[2], Takeshi Yamada[3], Yoshiaki Fukushima[3] (1. Shinshu U (Japan), 2. VISTEC (Thailand), 3. CROSS (Japan))

International Conference on Nanospace Materials 2025@Nagano

Shinji Inagaki

Nagoya University, Japan

E-mail: Inagaki.shinji.e7@f.mail.nagoya-u.ac.jp

Advancing Nanomaterials Frontiers: A Tribute to Dr. Fukushima

For 35 years at Toyota Central R&D Labs, Dr. Yoshiaki Fukushima conducted pioneering research into nanostructured materials. I began working on nanomaterials under his guidance immediately after joining the company in 1984. He gave me considerable freedom while offering timely and thoughtful advice at key moments. Here, I would like to introduce several research projects I conducted under his supervision:

1. Investigating the adsorption properties of the unique clay mineral *sepiolite* and its application as a host for inclusion polymerization.
2. Conducting preliminary research on nylon–clay hybrid (NCH) materials.
3. Exploring the story behind the discovery of ordered mesoporous silica (FSM), which was inspired by project (2).

Takeshi YAMADA

Affiliation CROSS

E-mail:t_yamada@cross.or.jp

Title of the presentation

Neutron scattering study on clay and polymer nano-composite

Dr. Fukushima contributes to promote neutron scattering in variety of science fields in CROSS. In this presentation, I will introduce the following two topics,

1) Quasi-elastic neutron scattering study on polymer dynamics in polymer-clay nano composite[(1)].

2) Structural study of hectorite aqueous suspensions by small-angle neutron scattering coupling with rheological measurement (Rheo-SANS)[(2)].

Reference

(1) Fukushima, Y., Yamada, T., Tamura, K. and Shibata, K. *Applied Clay Science*, **155**, 15-19 (2018).

(2) Iawase, H., Ogura, T., Sakuma, H., Tamura, K. and Fukushima, Y. *Applied Clay Science*, **157**, 24-30 (2018).

Makoto OGAWA, Kamonnart (Jaa) Imwiset, Takayuki HAYAKAWA, Takeshi YAMADA, Yoshiaki FUKUSHIMA

Affiliation: VISTEC, Hojun, and CROSS

E-mail: waseda.ogawa@gmail.com (Makoto OGAWA)

States of Guest Molecules/Molecular Assemblies in Two dimensional Nanospace

Dioleyldimethylammonium ion was used to construct hybrid with a clay (a bentonite) and the hybrid was shown to possess higher flexibility than that of the hybrid of dioctadecyldimethylammonium and the clay. The difference between the two hybrids was studied by molecular probe and quasi-elastic neutron scattering. The useful characteristics of the dioleyldimethylammonium-clay as a new class of materials for host-guest systems with versatile application were suggested.