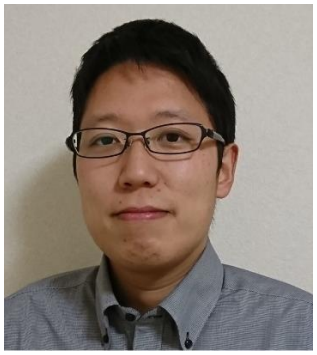

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Research keywords: zeolite, layered silicate, mesoporous silica, solid-state NMR, ethanol-to-olefin, NH_3-SCR, photo-catalysis, selective oxidation, epoxidation, KA-oil.

I'm interested in silicon oxide based functional materials such as microporous material zeolite, and its related material layered silicates. I'm trying taller-made synthesis of zeolite via nano-meter order precursor that can prepared by intentional manner. The synthesis strategy using starting zeolite[1,2] and stepwise synthesis gel preparation[3] gave useful physicochemical property of the obtained zeolite that cannot be realized by using general synthesis method.

Frameworks of the layered silicates are similar to the zeolite framework, whereas as the interlayer surfaces are covered with silanol groups, the material are easily functionalized by various modifications. Recently, I reported the successful syntheses and structural analyses of new layered silicates, the Hiroshima University Silicates (HUS-x series).[4-6]

The obtained zeolite material revealed the excellent catalytic stability and activity in bio-ethanol to light olefin, selective catalytic reduction of NOx with ammonia, and basic acid catalysis reaction.[7] In contrast, the layered silicate material modified by various gest unit (such as silane coupling agents, metal complexes) were useful catalysts for selective oxidation of hydrocarbon using oxidant [8,9] and/or under photo-irradiation [10]. I also measured solid-state (MAS) NMR of variety material. I would collaborate by using the NMR skill as well as the synthesis skill of above materials.

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