

Amino-Acid Assisted Approach to Synthesize Novel Mesoporous Silica through Self-Assembly

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In this talk, an approach to synthesize novel ordered mesoporous silica through self-assembly of silica nanospheres (SNSs) will be introduced, where basic amino acids play critical role both in the formation and the assembly of SNSs.¹⁾ SNSs uniform in size of 10–50 nm have been synthesized using silicon alkoxides and basic amino acids as silicon source and catalyst, respectively. SNSs are easily assembled into ordered mesoporous structures upon drying. The mystery of the formation and the assembly has been investigated by using several characterization methods²⁾. The SAXS measurements reveal that SNSs with a size of *ca.* 9 nm are formed in the early stage, and thereafter the size of the SNSs is gradually increased; however, the number density of the SNSs remains unchanged along with time. Amino-acid assisted approach enables to synthesize SNSs uniform in size of 10–50 nm, and to prepare novel mesoporous silica possessing ordered nanovoid of 5–25 nm under mild condition, which have never been realized by the previously reported methods.

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2) T. Yokoi, J. Wakabayashi, Y. Otsuka, W. Fan, M. Iwama, K. Aramaki, A. Shimojima, T. Tatsumi, T. Okubo, in preparatio.