Furukawa Group SEMINAR

"Catalysis inside a box"

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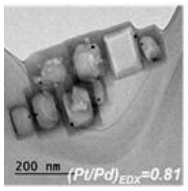
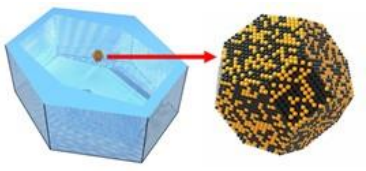
Tuesday October 9th, 2018 16:00-17:30
Kyoto University KUIAS (iCeMS Main Building)
2F Seminar Room (#A207)

Supported metal nanoparticles are usually synthesized by ion-exchange or wetness impregnation on porous carriers. Unfortunately, sintering of nanoparticles usually occurs in reaction conditions leading to particle growth and eventually to a degradation of physical properties. Encapsulations of metal particles in a microporous support have been presented as a solution against sintering since the porous scaffold may limit particle diffusion and eventually their coalescence. However, the efficiency of this approach is limited as the size of the pore is usually larger than the size of the particle. Furthermore diffusional limitation becomes very likely when sub-nanometric microporous support are in play.

Recent developments in zeolite materials with hierarchical porous structures for which the mean diffusion path is considerably reduced offers new perspectives in Catalysis by metals.
We present general concepts for the synthesis of hollow zeolites and original hollow silicalite-1 and ZSM-5 single crystals with thin and controlled shell thickness [1-3].





$Pt_{1.6}Pd_{2.1}$@silicalite-1

[1] D. Farrusseng, et al., New J. Chem. (2016), DOI: 10.1039/C5NJ02608C, [2] Y. Wang, et al, Micro. Mesoporous Mat. (2008), DOI:10.1016/j.micromeso.2007.11.027, [3] SW. Li et al., J.Catal. (2015), DOI: 10.1016/j.jcat.2015.09.006

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