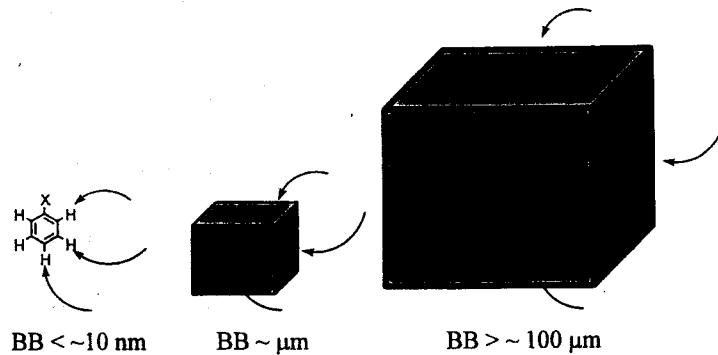


size of building block	solubility	purification	selectivity
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BB < 10 nm	good	easy	good
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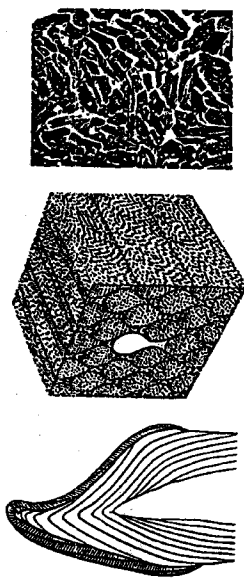
10 nm < BB < 100 μm	none	difficult	none
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100 μm < BB	none	easy	good
-------------	------	------	------



© enamel layer of teeth : supercrystals of 5~12 million enamel rods (orientation-controlled)

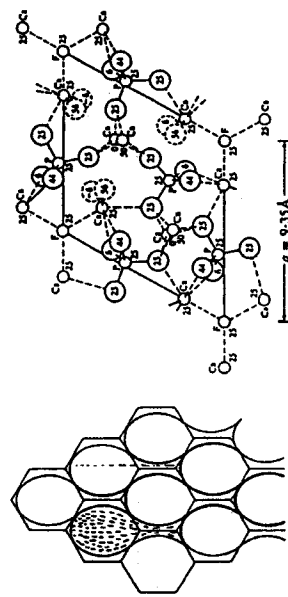
© enamel rods : supercrystals of apatite (random orientation)



protective enamel layer of a tooth

perspective view of packing of enamel rods

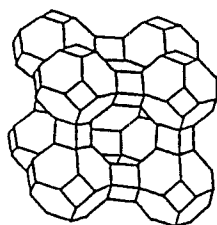
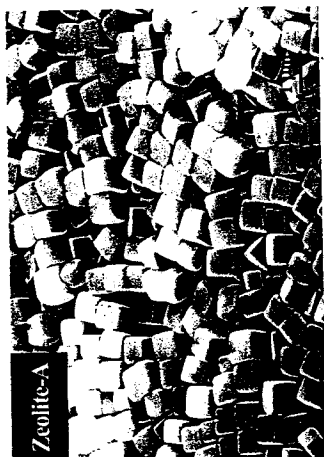
aggregates of apatite crystals in an enamel rod



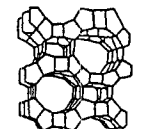
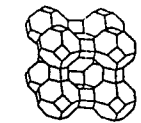
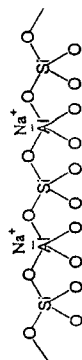
structure of apatite

cross section of enamel rods

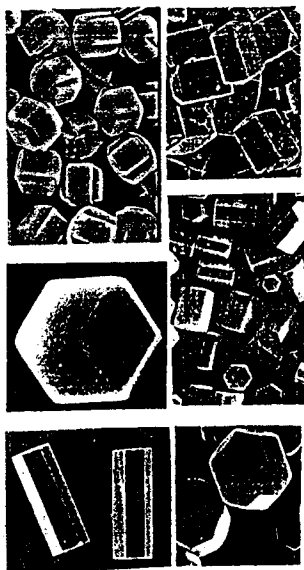
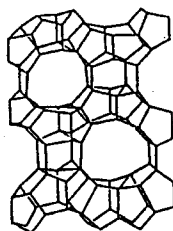
Zeolite Microcrystals
 (a class of insoluble inorganic polymers)



· crystalline porous aluminosilicate (0.2 ~ 10 nm)



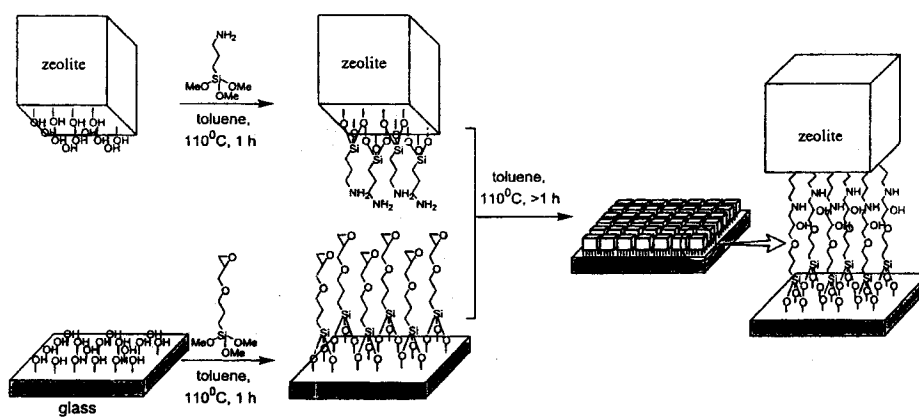
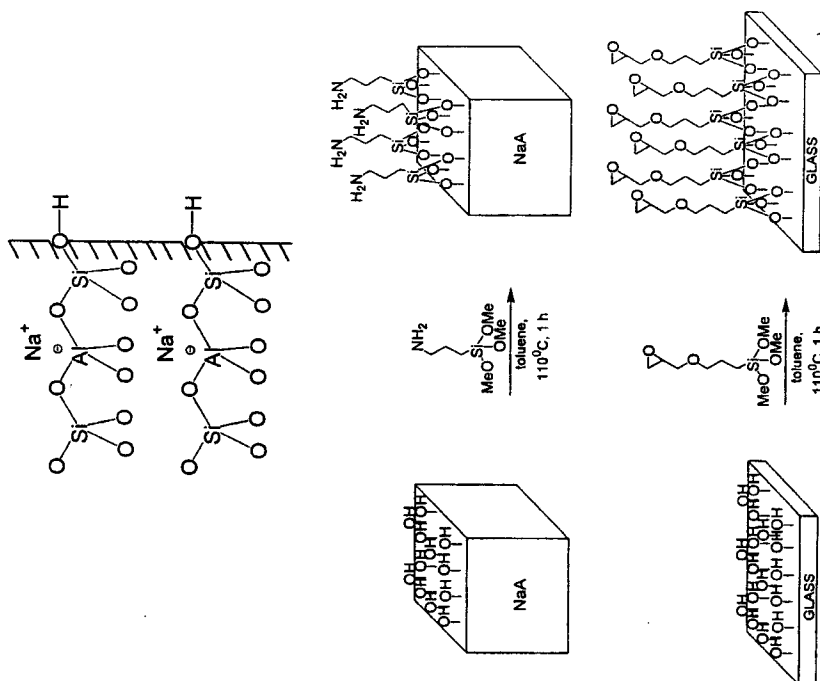
· morphology (size $\approx \mu\text{m}$)



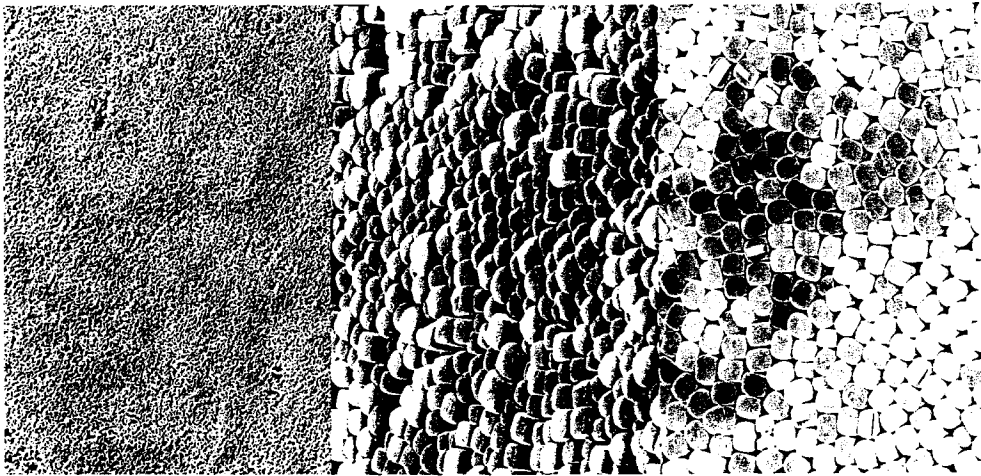
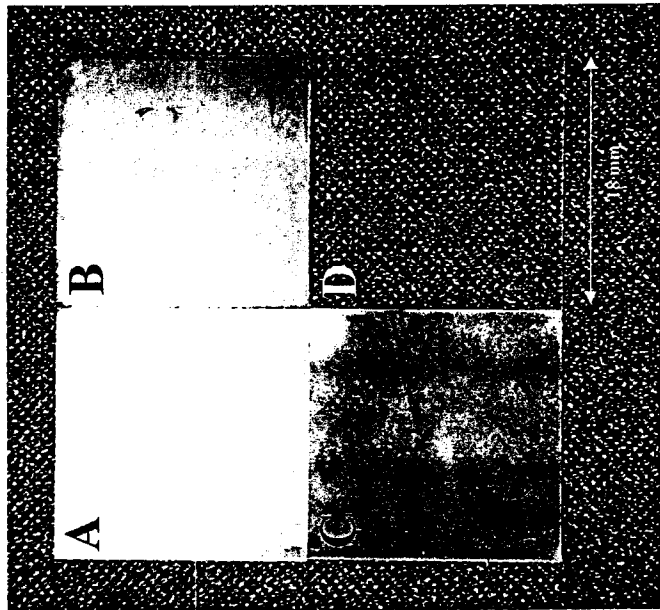
· usage

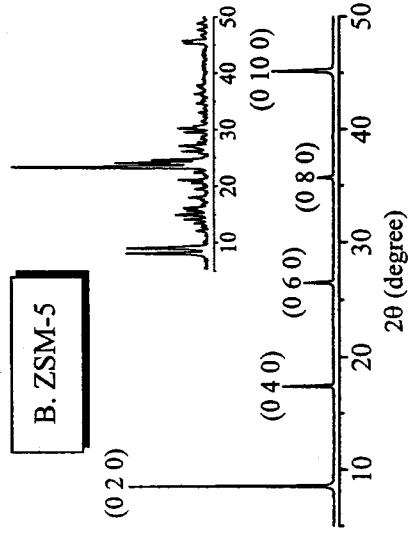
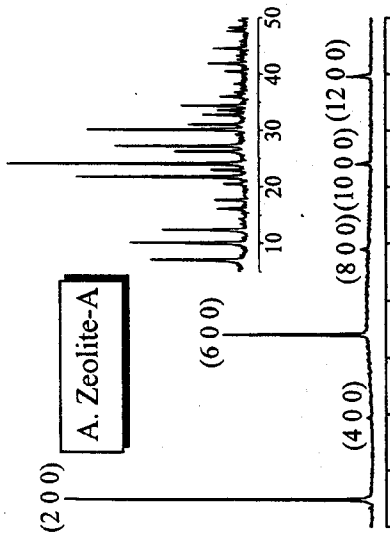
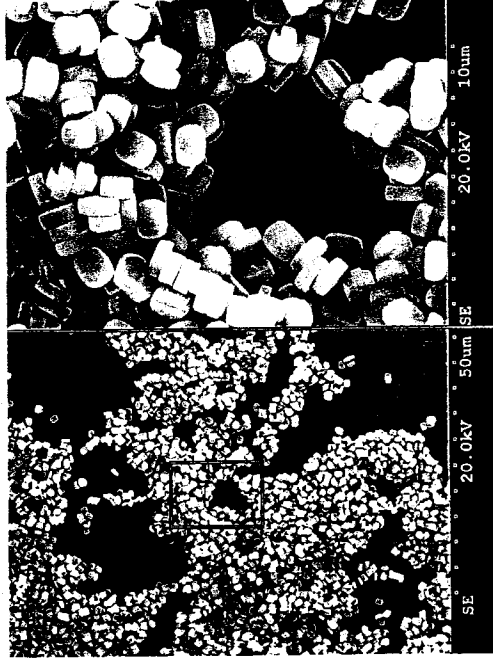
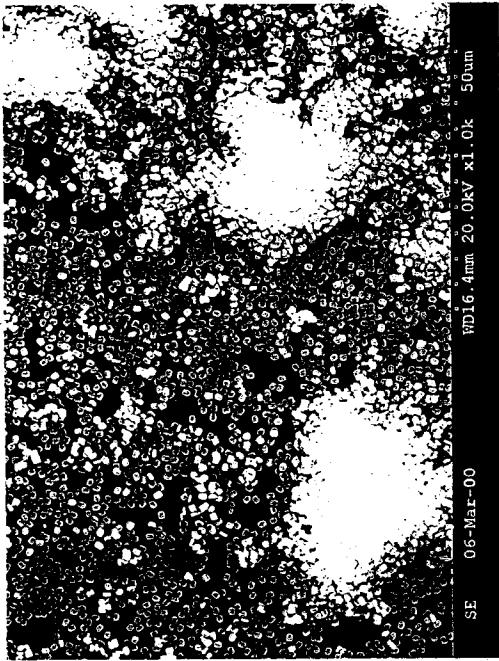
industry : catalysts, ion exchangers (detergent builder), adsorbents, desiccants, animal feed aids

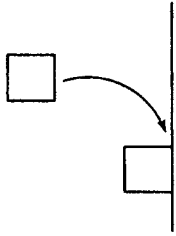
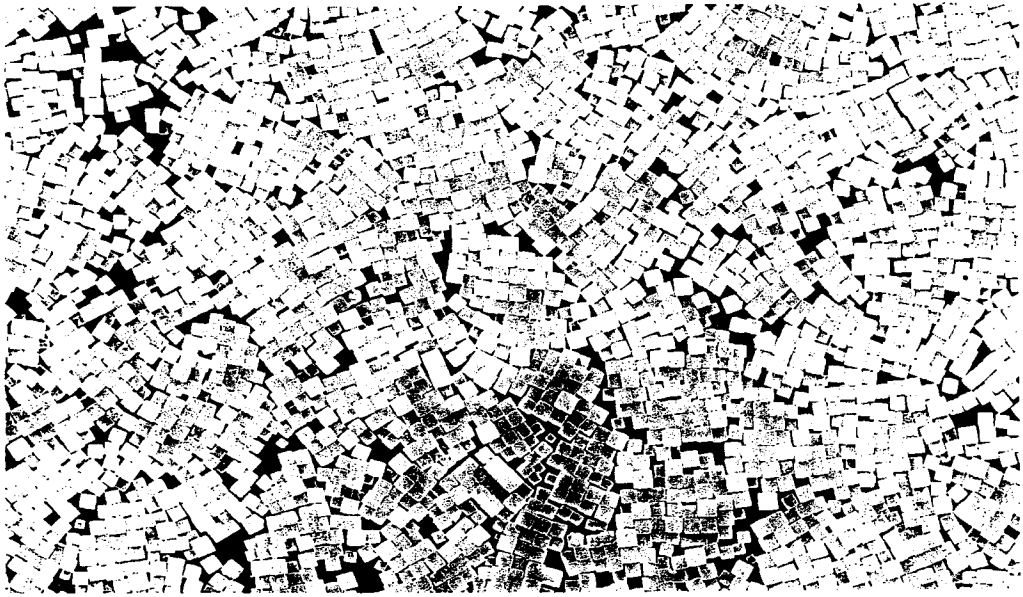
academy : micro reactors for various model reactions, hosts for various NLO substances (semiconductor, organic NLO molecules)



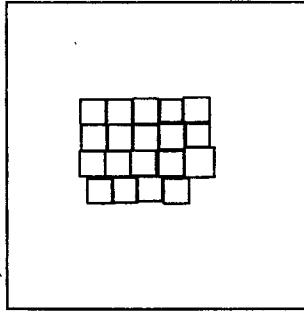
A. Kulak, Y. J. Lee, Y. S. Park, K. B. Yoon, *Angew. Chem. Int. Ed.* 2000, 39, 950-953.



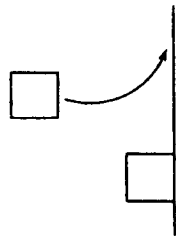




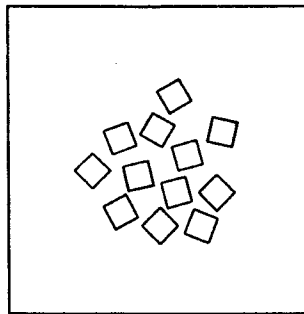
close packing



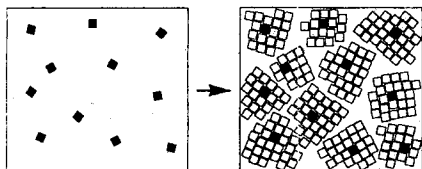
reference crystal
- template
- adjacent site activation



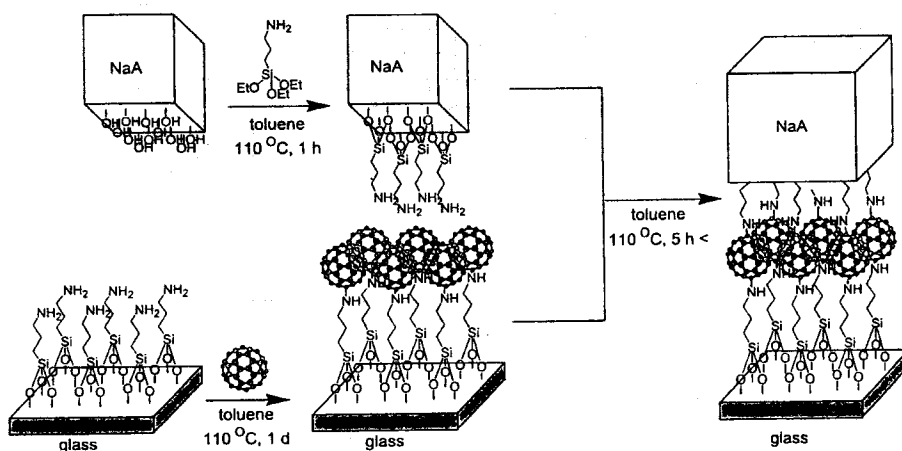
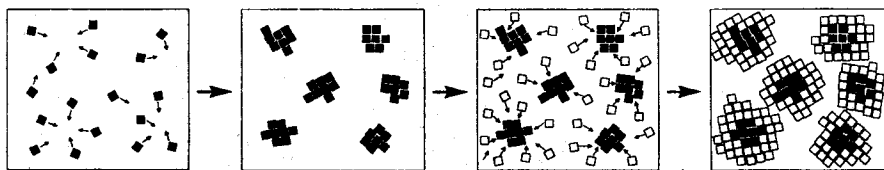
random packing



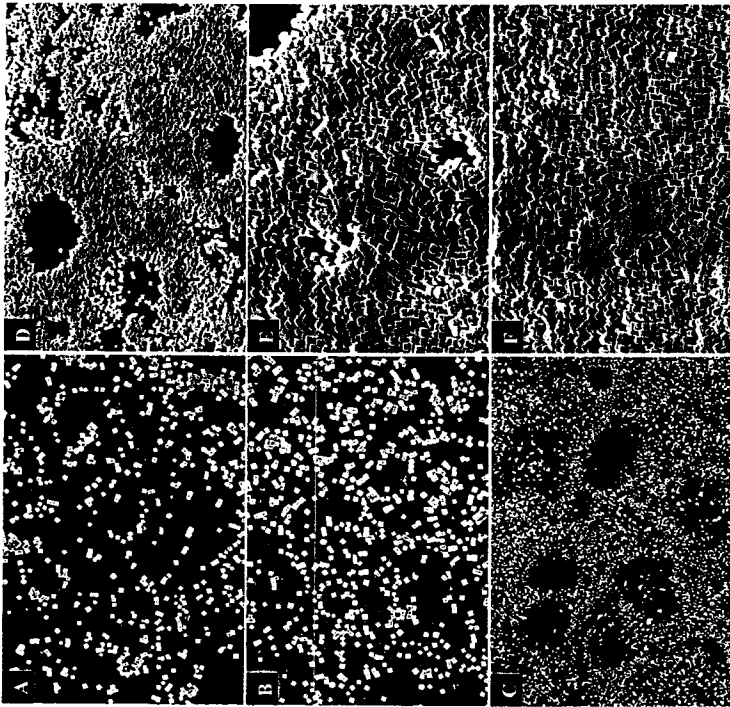
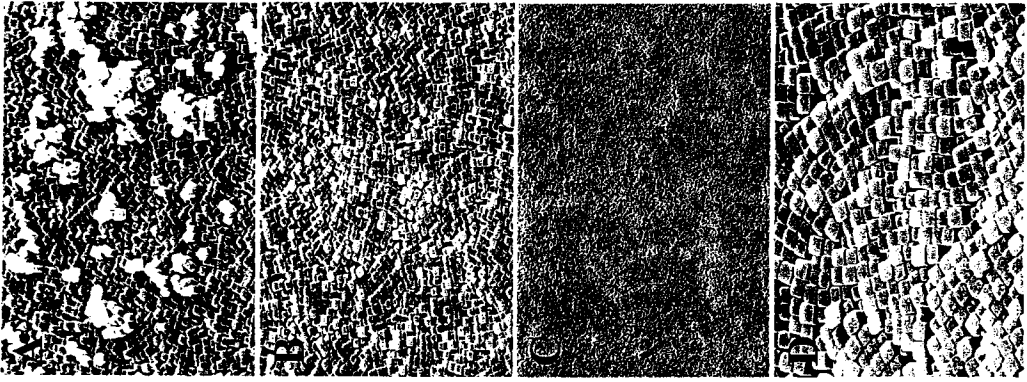
A. Seed Mechanism



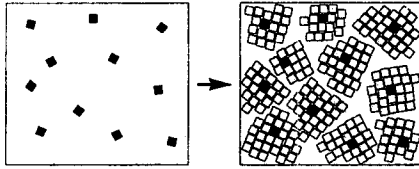
B. Surface Migration Mechanism



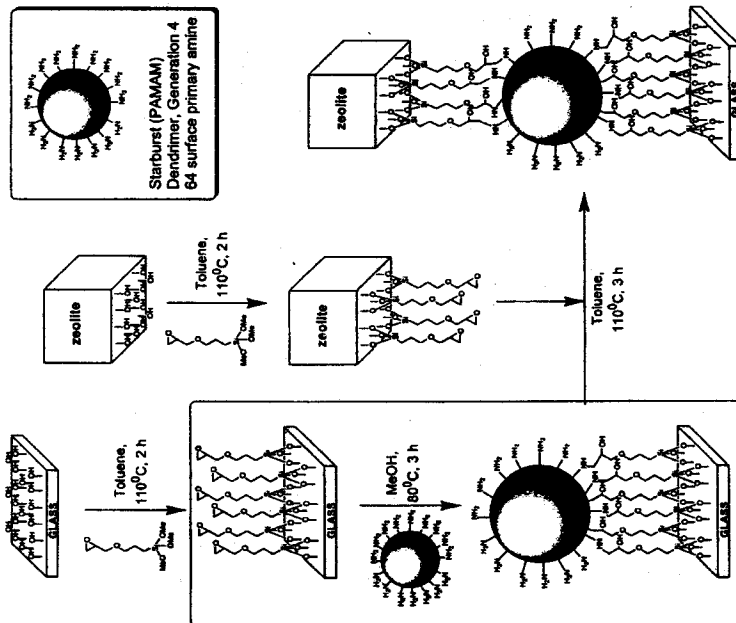
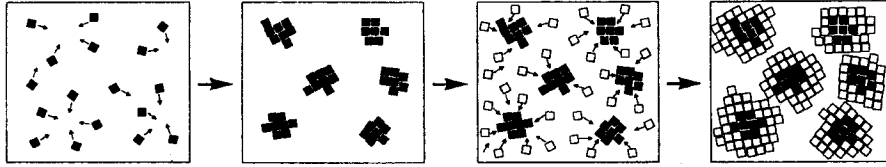
Choi, S. Y., Lee, Y. J., Park, Y. S., Yoon, K. B. *J. Am. Chem. Soc.* in press

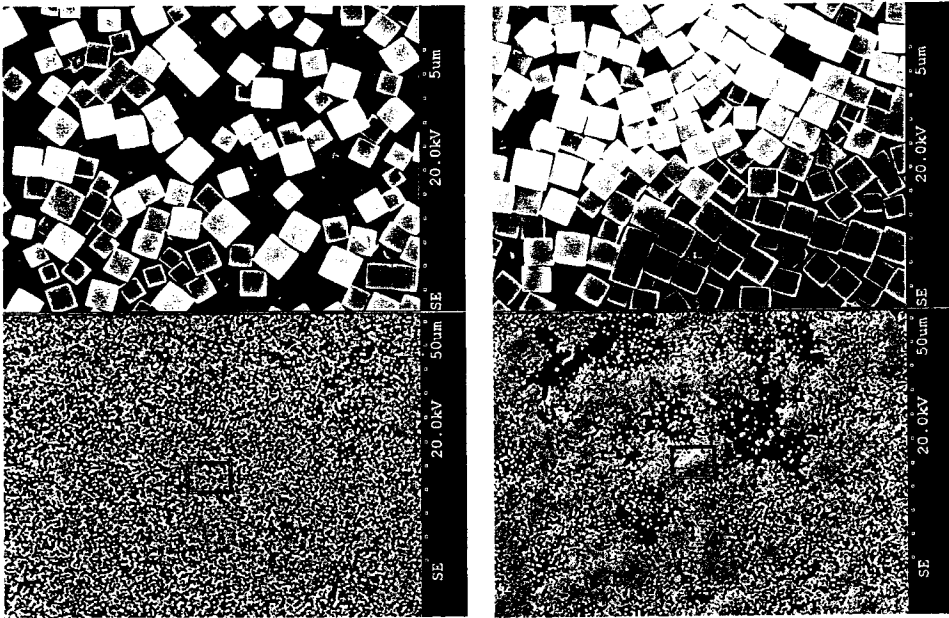


A. Seed Mechanism

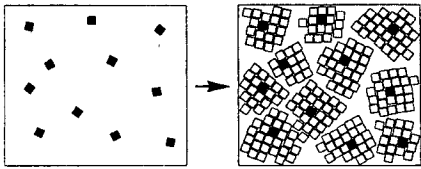


B. Surface Migration Mechanism

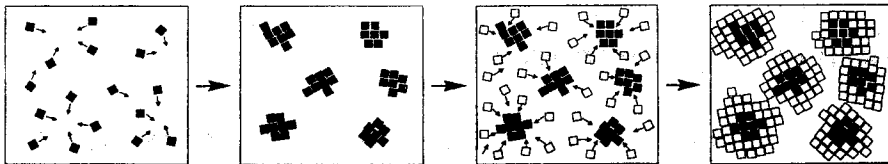


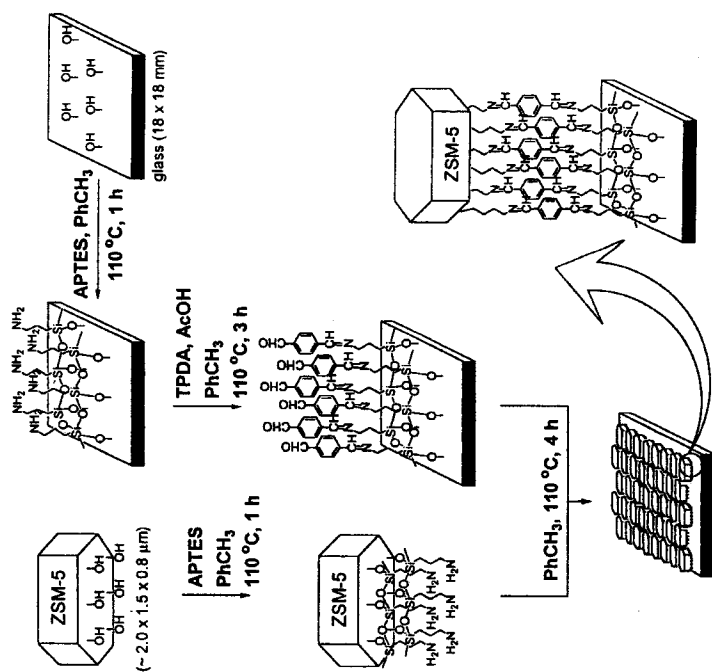


A. Seed Mechanism

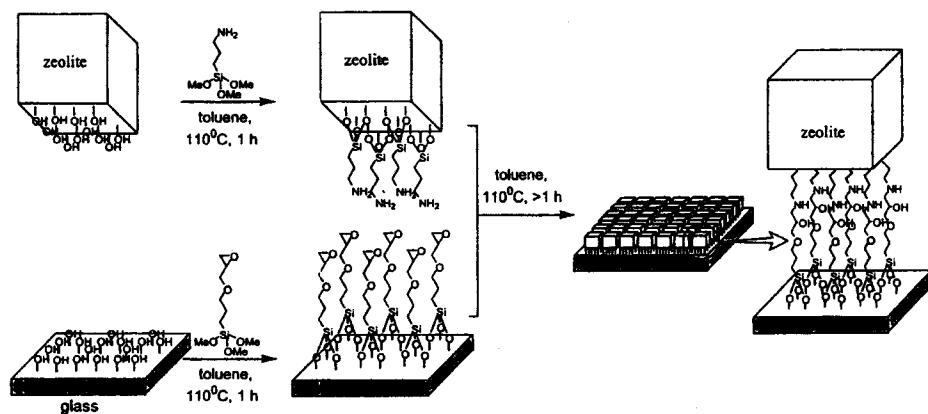


B. Surface Migration Mechanism

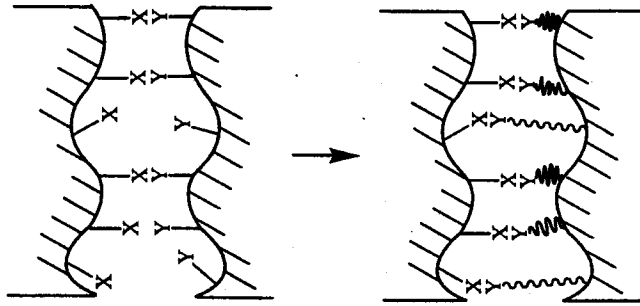
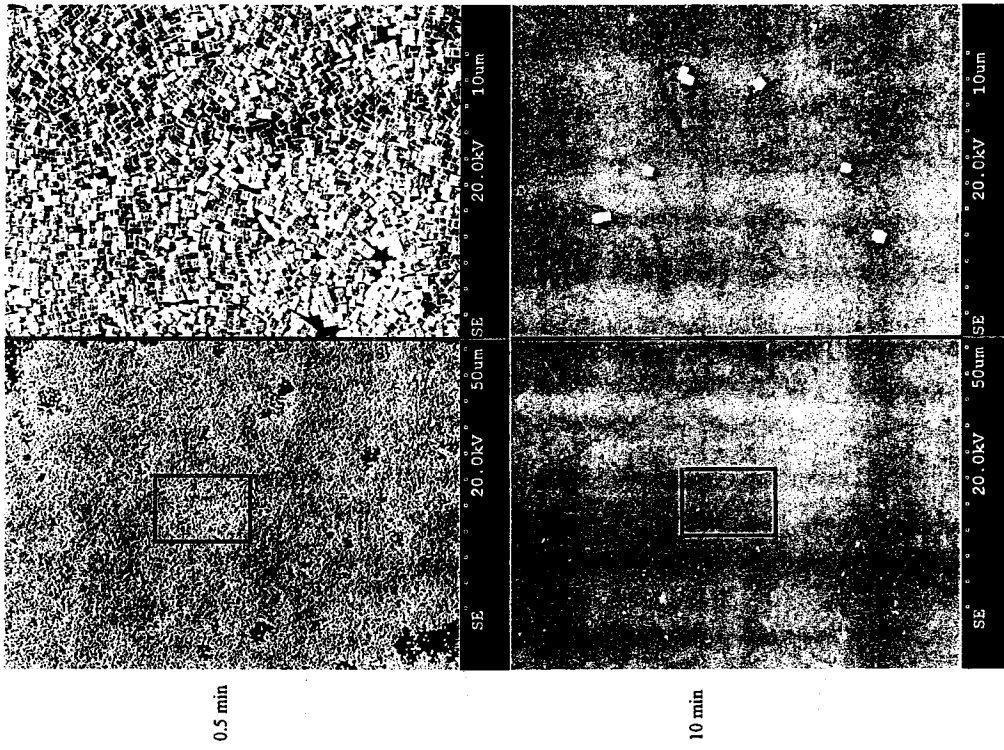


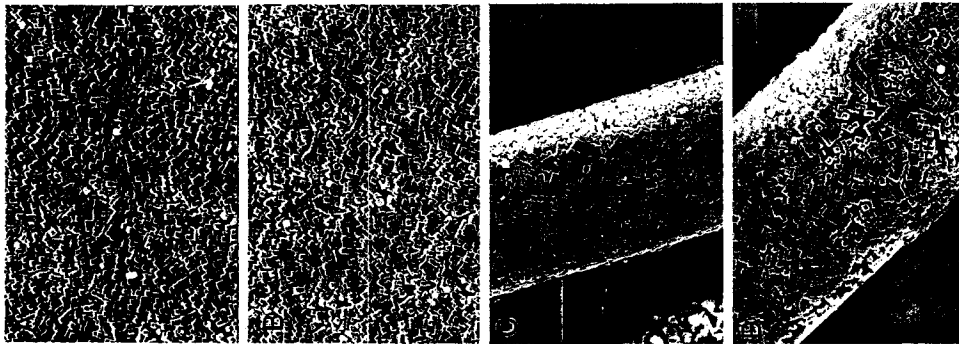


Lee, G. S. Lee, Y. J. Ha, K. Yoon, K. B. Yoon, *Tetrahedron* 2000, in press



A. Kulak, Y. J. Lee, Y. S. Park, K. B. Yoon, *Angew. Chem. Int. Ed.* 2000, 39, 950-953.





Glass (A,B) and glass-wool(C,D).

