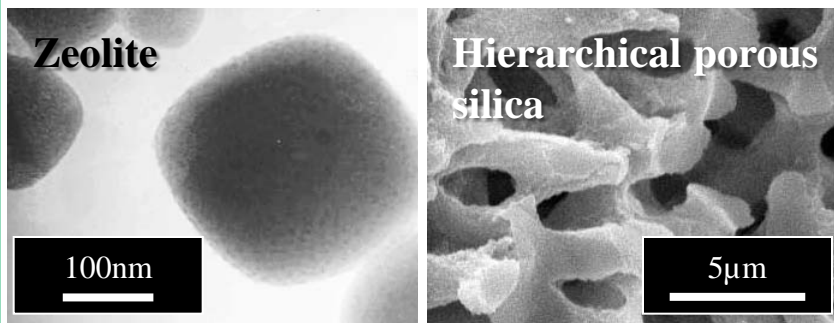
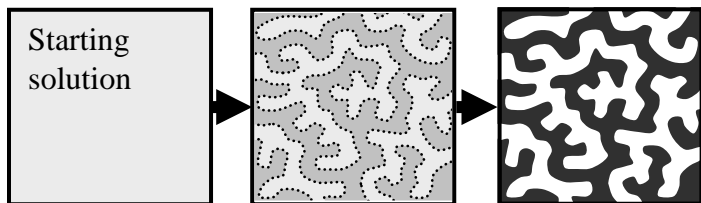


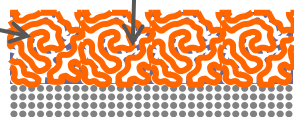
Porous Material Prepared via Phase Separation

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Porous structure from phase separation



High surface area membrane for dehydration



Fermentation

Distillation

Dehydration

Biomass

Bioethanol

Content:

In ordinary solution, concentration becomes uniform by mass transfer from higher concentration part to lower one. But in particular condition, mass transfer goes conversely from lower part to higher one, resulting in concentrated-thin two phase structure in which these phases interpenetrate each other in micron scale. This type of phase separation is called “spinodal decomposition”. Hierarchical porous silica (HPS) shown in left figure is formed via spinodal decomposition.

This HPS has inner pore wall, which area is as much as A4 size paper in just sugar cube sized volume. We are fabricating novel membrane with larger surface area and higher water permeability than conventional ones by forming water selective zeolite thin layer on the pore wall, intending to apply dehydration process in bioethanol production.

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