Novel Reticular Polymeric Nanomembranes Formed within Unconventional Electric Double Layer: Chemical Transformation of Pore Environment

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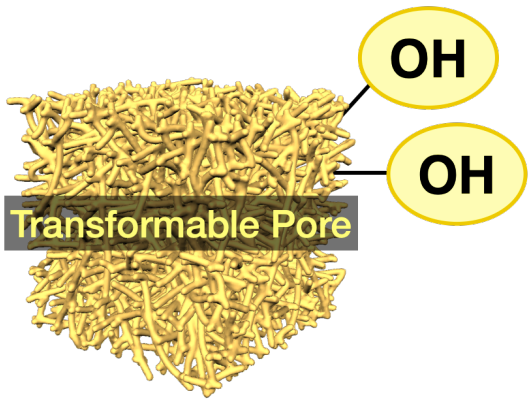
In a reticular material bearing molecular-sized pores, functional groups located at the pore surface play highly important roles, because molecules in such a pore strongly interact with the surface.[1] Therefore, if we can modify the pore surface with desired functional groups, we may be able to obtain reticular materials with completely new properties. However, while there are many examples of reticular polymeric materials with nanometer-sized pores, those surfaces are hardly modifiable except for a limited number of examples.[2]

Novel free-standing reticular polymeric nanomembranes synthesized in our group have a pore whose size is around 1 nm and heavily functionalized with hydroxyl groups, which can be easily functionalized.[3] Here we report the chemical transformation of the hydroxyl groups that lead to a large change in the properties of the nanomembrane. This result indicates that the chemical environment of pore surface has crucial effect on reticular materials.



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