

Organic Dye Adsorption on porous Xerogel

이강택*, 주현우, Zhijian Wu
연세대학교
(klee@yonsei.ac.kr*)

We investigate the adsorption of four different organic dyes (i.e. methyl orange, alizarin red S, brilliant blue FCF, and phenol red) on porous xerogels. To understand the factors affecting the adsorption capacity of the xerogels, we vary the hydrophobicity and the pore size of the xerogels as well as the solution pH. We control the hydrophobicity by mixing two different precursors (i.e. vinyltriethoxysilane (VTES) and tetraethoxysilane (TEOS)), and the pore size by using cetyltrimethylammonium bromide (CTAB) as a templating agent. We find that the adsorption capacity is used instead of the purely inorganic or the microporous xerogel. In all the cases studied, adsorption decreases as the pH is increased due to the electrostatic repulsion between the dyes and the xerogel surface. We find that both the hydrophobicity and the pore size increase are required to improve the adsorption capacity significantly.