

Study of Macro-Mesoporous γ -Alumina with grainy wall

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The macro-mesoporous γ -alumina with grainy wall was synthesized aluminum organic salt as precursor, polystyrene spheres as templates for macropores. This macroporous alumina possesses a highly ordered porous structure with grainy wall. These macro-mesoporous alumina has high surface area and large pore volume due to their grainy structure. The formation of grainy macroporous wall of material relates strongly to the hydrolysis of aluminum salt in water. By controlling the water amount in synthesis process, Pseudoboehmite nanoparticles were found as an intermediate substance. The agglomeration of these nanoparticles was formed the γ -alumina grain in structure after calcination at 600oC. This material is expected to be good candidates in catalysis, adsorption and as composite materials (especially, its potential applications in heavy oil processing catalysis due to the uniform pore structures, larger surface area and grainy wall structure, which can improve access of the high molecule weight reactants to the active sites).