

Abstract Submitted
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Synthesis and ion exchange studies of porous nano-crystalline materials¹ AARON CELESTIAN, Western Kentucky University — Nanoporous materials have a long and important history in petroleum science. The ion diffusion properties of natural zeolites and their synthetic analogues have been used successfully for catalysis and molecular separation during the petroleum refinement processes. The goal of this research is to understand processes that direct ion diffusion and allow for specific selectivity in heterosilicate titanium/zirconium/niobium silicate, a class of zeolitic analogues. The tools utilized and insights gained into ion diffusion processes will be broadly applicable to other nanoporous materials and will directly benefit energy and petroleum sciences. The goal of this research is to detail the synthesis and cation exchange mechanisms of rare earth elements (REEs: Y, Eu, Gd, Tb) and transition metals (Ni, Cu, Zn) in this suite of nanoporous heterosilicates compounds, and explore new synthetic chemical/structural analogues.

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