

Public Abstract

First Name:Eric

Middle Name:Paul

Last Name:Leimkuehler

Adviser's First Name:Galen

Adviser's Last Name:Suppes

Co-Adviser's First Name:

Co-Adviser's Last Name:

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The following thesis investigates the production of activated carbon, an environmentally friendly adsorbent which is used in many industries. Activated carbon can be derived from many different sources and produced in varying production processes. The raw materials used, activation process, and process parameters determine the physical properties and performance characteristics of the resulting carbon. Modifying these activation properties determines the porosity and pore volume distribution in the carbon. The goal of this thesis is to detail a mass balance on the production of activated carbon and develop quick screening methods to observe and compare the effects of different precursor materials, chemical reagents, and process variables on this production process. At the University of Missouri activated carbon research is conducted under the ALL-CRAFT (Alliance for Collaborative research in Alternative Fuel Technology) project. The project is driven by a collaboration between the chemical engineering, physics, and chemistry departments, and also the MU research reactor (MURR.)