

Effect of different biomass pretreatments and processing parameters on the properties and performance of NARA lignin-derived activated carbons.

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The Northwest Advanced Renewables Alliance (NARA) is an interdisciplinary research program aimed at evaluating the technical and economic feasibility of using Northwest softwood forest residuals for the production of renewable jet fuel. The NARA Co-Products team is responsible for developing value-added products from the lignin remaining after the conversion of cellulosic sugars to jet fuel. Members of the Co-Products team at Weyerhaeuser are studying the conversion of this lignin to activated carbon, a porous form of carbon that is commonly used as an adsorbent for the removal of trace contaminants from air and water and in a variety of other applications. Our research focuses on studying the effect of processing parameters on the physical properties of NARA lignin-derived activated carbons and testing selected carbons in two areas: 1) Removal of mercury from coal flue gas and 2) Capacitive energy storage in an electrical double layer capacitor. Here we will discuss the effect of different biomass pretreatments and activation conditions on the porous structure of lignin-based activated carbons as studied using gas physisorption analysis. Preliminary results will also be presented on the performance of these carbons for removal of mercury from simulated coal flue gas and capacitive energy storage.