

Abstract Submitted  
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**Electricity from Coal Combustion: Improving the hydrophobicity of oxidized coals** MOHINDAR SEEHRA, VIVEK SINGH, West Virginia University — To reduce pollution and improve efficiency, undesirable mineral impurities in coals are usually removed in coal preparation plants prior to combustion first by crushing and grinding coals followed by gravity separation using surfactant aided water flotation. However certain coals in the US are not amendable to this process because of their poor flotation characteristics resulting in a major loss of an energy resource. This problem has been linked to surface oxidation of mined coals which make these coals hydrophilic. In this project, we are investigating the surface and water flotation properties of the eight Argonne Premium (AP) coals using x-ray diffraction, IR spectroscopy and zeta potential measurements. The role of the surface functional groups, (phenolic -OH and carboxylic -COOH), produced as a result of chemisorptions of O<sub>2</sub> on coals in determining their flotation behavior is being explored. The isoelectric point (IEP) in zeta potential measurements of good vs. poor floaters is being examined in order to improved the hydrophobicity of poor floating coals (e.g. Illinois #6). Results from XRD and IR will be presented along with recent findings from zeta potential measurements, and use of additives to improve hydrophobicity. Supported by USDOE/CAST, Contract #DE-FC26-05NT42457.

Mohindar Seehra  
West Virginia University

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