Low-Rank Coals -- A Resource Not Fully Exploited

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Total recoverable reserves of low-rank coals (subbituminous and lignite) are estimated in the hundreds of billions of tons. Almost all of this resource is located west of the Mississippi. Although increasing amounts of these coals are being used for utility purposes, less than 5% is cleaned prior to burning; probably larger amounts should be cleaned. The fact that these coals are not caking coals makes them suitable for use in certain gasifiers and the first plants for the conversion of coal to synthetic fuels will likely arise in the west. Historically coal science has largely been confined to the study of bituminous coals and there are several so-called models of 82-83% carbon coals. The structures of low-rank coals, however, remains largely a mystery. The constitution of low-rank coals, including oxygen functionality, and the effects of their mineral and moisture contents on reactivity and end use will be discussed.