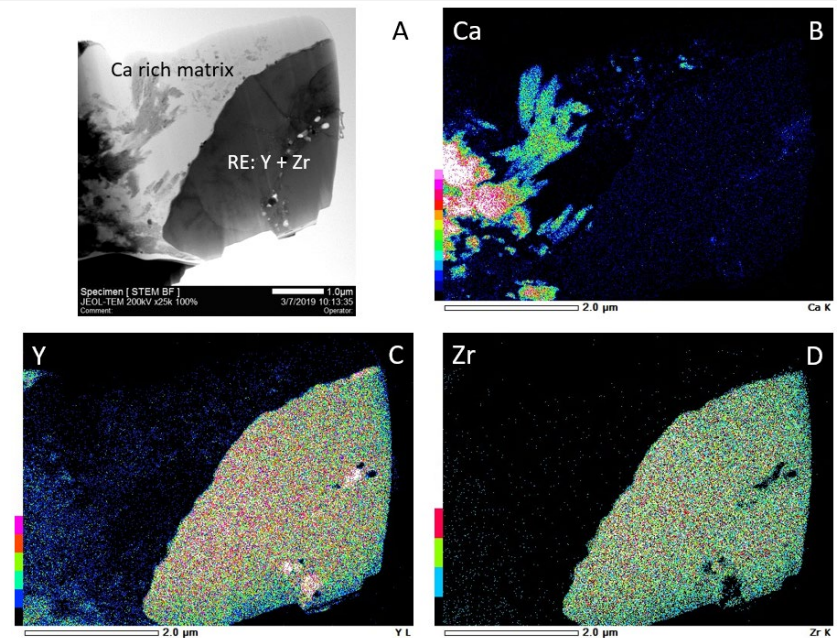


Detection of Rare Earth Elements in Coal Combustion Byproducts

Rare Earth Elements (REEs) are critical materials for the manufacture of modern electronics. This work is motivated to identify domestic reservoirs of REEs to improve supply chain security. Further, the utilization of coal fly ash for secondary purposes could reduce the environmental impact of the coal industry compared to conventional ash pond storage methods. Coal fly ash samples were examined using SEM / EDS to identify REEs grains. These were extracted using precision FIB milling to produce FIB lift-out sections for subsequent TEM analysis. Crystallographic and chemical analysis suggest the yttrium containing grain is a zircon.



Rare earth elements identified in coal fly ash

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National Research Priority: NSF-Growing Convergence