Abstract Submitted
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Nanostructuring of WS_2, and MoS_2 by Salt-Assisted Milling in NaCl and KCl[1] DENISE OMORUYI, TABBETHA DOBBINS, Rowan University — This project will measure bond length, electronic structure, and particle sizes for the nanostructured transition metal dichalcogenide (TMD) catalysts MoS_2, and WS_2. The process to nanostructure the TMDs is expected to deliver particles in high yield (20 mg/mL dispersed in solvent). The particles should have lateral dimensions of 4 nm to 5 nm and thicknesses of 1nm (indicating one or two exfoliated layers are formed). Key to the process is the use of salts (e.g. NaCl and KCl) to penetrate the TMD layers whilst the material is being pulverized during a ball milling process. Published literature gives a mechanism for the effectiveness of salt-assisted milling based on mechanical interactions with no data reported on Na/K-M, Na/K-S (where M = Mo, or W) chemical interactions. Results gained will yield new insights to the literature. If M-S bond lengthening is observed, it could explain the hierarchy of catalytic efficiency among the TMDs.

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