

## MS18-P17 | THE INFLUENCES OF MG INTERCALATION ON THE STRUCTURE AND SUPERCAPACITIVE BEHAVIOURS OF MoS<sub>2</sub>

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Metallic 1T MoS<sub>2</sub> greatly benefits the application of MoS<sub>2</sub> in many fields, such as electrochemical energy storage systems, due to its considerably higher conductivity as compared to semiconducting 2H MoS<sub>2</sub>. Alkali metals, such as Li, Na and K, are always used to prepare 1T MoS<sub>2</sub> through intercalation of alkali metal ions into the interlayer of 2H MoS<sub>2</sub>. Nevertheless, the properties of MoS<sub>2</sub> with alkali-earth metals as guest in the interlayer are rarely investigated and the influences of these guest ions on the polymorphs of MoS<sub>2</sub> have not been known. Herein, we introduced hydrated Mg ions as the guest into MoS<sub>2</sub> nanosheets, which leads to enlarged interlayer spacing of 1.144 nm as compared to pristine MoS<sub>2</sub> and restacking MoS<sub>2</sub>. Moreover, the 1T phase concentration after the introduction of hydrated Mg ions was as high as ~90%. Consequently, as supercapacitor electrode, the specific capacitance of the MoS<sub>2</sub> with Mg guest ions was greatly improved as compared to the restacking MoS<sub>2</sub> or pristine MoS<sub>2</sub> counterparts at different discharging/charging rates. Both the energy densities and power densities of the MoS<sub>2</sub> with Mg guest ions electrode were therefore superior to the other two electrodes.