

Tuning the microstructure of polymer precursors for water splitting catalyst supports

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It is not still easy to produce commercial products based on nanomaterials, mainly because of their sophisticated manufacturing processes and low cost-effectiveness. For example, although significant efforts have been made toward producing functional nanomaterials for energy storage and conversion, there has not been a proportional amount of commercialized research output. In this presentation, we report a simple, scalable, surfactant-in-polymer templating strategy to readily create controlled long-range secondary substructures in a primary structure. Importantly, adding only the functional surfactant to the polymer precursor led to the creation of useful products with long-range secondary substructures and functionality that can be expressed in the hierarchical structure. The morphology and composition of the secondary substructures were tunable by tailoring the characteristics of the surfactant employed. Furthermore, the resulting products showed excellent performances as electrode materials and electrocatalysts for charge storage and water splitting.