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Waste Polymer Derived Porous Carbon for Energy Storage

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Abstract: Nowdays, many common thermoplastic polymers used in our society, such as polypropylene (PP) and polystyrene (PS), are enriched carbon carriers compared to biomass. For example, the current global PP capacity of about 62 million tons is likely to extend by more than 23.5 million tons by 2019.[1] Waste PS and PP are one of main resources for the formation of "white pollution." Facing the increasing pressure from white pollution of waste polymers, how to treat these polymer wastes is still a great challenge. The traditional way is landfill, but this method does not fully take use of the polymer and wasting energy, so it is really promising to find a proper way to recycle polymer waste into highly valuable products (such as carbon nanomaterials) to reduce the white pollution in the world.[2] As previous reported work in our group,[3,4] the morphology of carbon materials produced from polymer is hard to control. The size and diameter of obtained carbon nanomaterials is widely distributed, which limited the application of the obtained carbon products. Thus it is urgently expected to develop a new method to produce carbon materials from polymer with controllable morphology and size.

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