

Construction of cathode with porous N-doped carbon for high performance lithium-sulfur batteries

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Lithium-Sulfur battery has been regarded as a promising candidate for the energy storage devices owing to its high energy density. However, their practical applications have still been limited by their poor cycling stability owing to the shuttle mechanism effect, volume expansion, soluble polysulfides, and the poor electrical conductivity of sulfur and Li_2S . To address this issues, N-doped porous carbon (N-PC) was derived with KOH activation and used as host for sulfur loading. N-PC/S was obtained by modified melt-diffusion method. As a result, N-PC/S composited cathode exhibited the excellent initial discharge/charge capacity and rate capability. The superior electrochemical performances mainly attributes to the synergistic effect including the large surface area and high conductivity of N-PC matrix, as well as the unique binding capability of the N functional groups. This work was supported by Basic Science Research Program through the National Research Foundation of Korea (NRF) funded by the Ministry of Education (NRF 2016R1D1A1B03930855).