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Synthesis, Characterization and Application of Porous Carbon-Based Composites in Energy Storage

Guest Editor:

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Deadline for manuscript submissions:
closed (20 June 2023)

Message from the Guest Editor

Porous carbons are highly compatible with other electroactive materials. When a smart design of the composite material is made, their combination not only overcomes the drawbacks of using each component separately, but also benefits from synergies that originate from their combined use. Generally, porous carbons constitute an ideal electron conductive scaffold to host a more electroactive substance (with a larger energy storage capacity than the carbon), enhancing its charge transport ability and utilization. Ideally, the more active material should be finely and homogeneously dispersed on the surface of the porous carbon for an optimized performance. In some cases, an adequate meso- or macroporosity in the carbon host can also help buffering the large volume changes occurring in the electroactive phase, which otherwise would be the origin of electrode pulverization upon repetitive charge/discharge cycling. Also, the type of porosity and surface chemistry can confer the carbon materials other advanced properties that contribute to the robust operation of the cell (e.g., microporous and doped carbons able to trap in the cathode side the intermediate polysulfides in Li-S batteries).

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Message from the Editor-in-Chief

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Journal Rank: JCR - Q1 (Metallurgy and Metallurgical Engineering) / CiteScore - Q2 (*Condensed Matter Physics*)

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