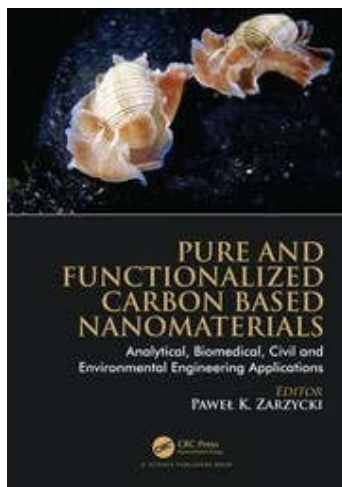


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Chapter



Carbon-based Nanomaterials for Energy Storage and Sensing Applications

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ABSTRACT

This chapter reviews carbon-based nanomaterials and their potential applications in energy storage and sensing. Several methods of synthesizing carbon nanomaterials have been developed over the

years. They include exfoliation, thermal decomposition, chemical vapor deposition, chemical-based techniques (including Hummer's method), laser abrasion, and arc-discharge method. There are several synthesis methods developed over the years for carbon nanomaterials. There are mainly three different approaches to the chemical vapor deposition (CVD) technique, namely, atmospheric pressure CVD, low pressure CVD, and plasma enhanced CVD (e.g., microwave plasma enhanced CVD). Chemical-based techniques are the chemical extraction of graphene films from graphite, unlike the liquid phase exfoliation technique. Laser ablation relies on the laser exfoliation or ablation of amorphous graphite, and is sometimes called pulsed laser deposition. In the field of materials science, electrochemical energy storage has become a big challenge due to the rising need for portable electronic devices and systems.

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