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## Title

### ***Biomass-derived graphene and nanostructured carbons: A review for electrochemical applications***

## Abstract

Carbon is the most promising material today. Biomass-residues are carbon-rich and have the possibility to replace obsolete, expensive and pollutant raw sources. For instance, graphene-like materials have attracted a powerful attention since its discovery. The varied textural properties, porosity, surface chemical functionality and conductivity make these biomass-derived materials ubiquitous to be used in solar cells, supercapacitors, and electrochemical sensors, among many other applications. The objective of the review is to summarize the advances in energy conversion, storage, and electrochemical sensing technologies using nanocarbons prepared from biomass. In this work we intend to correlate the nature of the graphene- or carbon-like material and its use in the different electrochemical applications mentioned. A discussion on the properties that define the effectiveness of a supercapacitor in energy storage is also proposed. The projections and future challenges in solar cells, supercapacitors and electrochemical sensors technology are also presented. © 2023 Elsevier B.V.

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## Author Keywords

Biomass; Electrochemical sensors; Energy storage; Graphene; Solar conversion

## Index Keywords

Biomass; Electrochemical sensors; Energy storage; Solar cells; Storage (materials); Supercapacitor; Biomass residue; Carbon A; Carbon rich; Chemical functionality; Electrochemical applications; Graphene likes; Nanostructured carbons; Solar conversion; Surface chemicals; Textural properties; Graphene

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