

# Nanomaterials Made of Metal Oxide and Biochar

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## Brief Report

Natural soils are mostly made up of metal oxide minerals, whereas biochar is a bioresource substance. Adsorbents such as metal oxide and charcoal are frequently utilised in water treatment. They're also changed to make catalysts. Surface modification of materials is crucial for improving performance, reusability, and stability, all of which are important for creating materials applications. Adsorption methods are a reliable way to remove contaminants from aqueous solutions. Nanomaterials made of metal oxide and charcoals are new adsorbents for water and wastewater treatment. The new insides of innovative hybridised adsorbents are a source of fascination.

In applications such as water treatment, a thorough knowledge of the interfacial characterisation and interactions of metal oxide and biochar materials in the presence of various green chemicals is critical. As a result, this Research Topic aims to pique the interest of scientists working on the synthesis, characterization, and surface modification of metal oxide and biochar materials using green chemicals like polymers, surfactants, and ionic liquids, as well as applications in the removal or degradation of heavy metal ions, ionic dyes, antibiotics, and pesticides. In addition, this Research Topic is appropriate for applications of metal oxide and biochar materials in environmental technology, catalysis, medicines, and chemical analysis. Original Research, Review, Mini

Review, and Perspective papers on a variety of topics are accepted, including but not limited to:

- Hybrid adsorbents based on metal oxide and charcoal nanomaterials: synthesis, characterization, and applications.
- Coating polymers, surfactants, and environmentally acceptable compounds on metal oxide and charcoal nanoparticles.
- For the removal of both inorganic and organic contaminants, nanocomposites and core-shell structures based on metal oxides and biochars have been developed.
- Adsorption and/or photocatalytic degradation of contaminants using metal oxide and biochar nanoparticles.
- Metal oxide and biochar nanoparticles have been used to remove inorganic (heavy metal ions, ammonium ions) and organic contaminants (antibiotics, dyes, insecticides, herbicides, personal care products) as well as other relevant sectors.
- Nanocomposites and core-shell metal oxides have been used to remove both inorganic and organic contaminants, as well as in other sectors.

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