

“Carbon-based aerogels for adsorption of toxic gases and air decontamination”

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Personal respiratory protection equipment (e.g., gas masks) use activated carbons and suitable catalysts. In the last decade, research for more efficient technologies has focused on other high surface materials such as MOFs and zeolites. In this work we describe novel highly porous, high surface area carbon aerogels from pyrolysis and etching of organic (co)polymers (synthetic polymers, bio-polymers, polymeric waste, etc.), and their use as adsorbents for toxic gases and therefore for air decontamination. The materials have been prepared in the form of powders, granules, spheres, pellets or monoliths. Different methods of pyrolysis and etching (e.g., various temperatures, various amounts of CO₂ - from stoichiometric amounts to large excess) have been tested, and their effect on the properties of the resulting carbons (BET, SEM and adsorption capacity) is being discussed.

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