

Phenazine Porous polymers for Radioactive Iodine Capture

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In this search for new sources of clean energy to replace the consumption of fossil fuels, nuclear energy comes as a solution, as efficient, clean, and highly beneficial as an energy source. All these benefits come with a cost of byproducts that could harm the environment such as radioactive Iodine. In this study, we propose the use of functionalized Polyethylene as an absorbent for the capture of radioactive iodine. The study will focus on the functionalization of PE by gamma rays that will produce peroxides on the surface of PE, followed by the functionalization with various heteroaromatic moieties that will create efficient binding sites on the surface of PE to capture Iodine. The synthesized functionalized PE will be characterized by various spectroscopic techniques such as NMR, and FT-IR. Thermal stability will be evaluated by TGA and DSC. The adsorption capacities will be investigated by UV adsorption. The kinetics and mechanistic details of the adsorption process will be investigated against different variables such as time, concentration, and heat. The study will provide a new direction that will help in the use of nuclear energy in the kingdom.

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