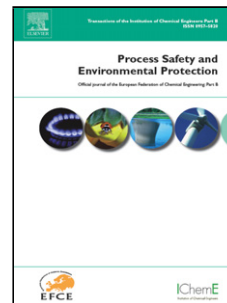


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Mercury removal using metal sulfide porous carbon Complex

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Abstract

Utilization of impregnated carbons (silver/sulfur/iodide) for mercury removal is common, however with limitations in adsorption capacity and application. Continued efforts to develop porous sorbents with better mercury adsorption capacity and kinetics are evident from open literature with the recent focus being on metal sulfide based impregnated porous carbons. However reports on application of metal sulfide based porous carbon adsorbents for gas phase mercury removal are not available in open literature. Towards this objective, the present work attempts to synthesis three different metal sulfide based porous carbons identified as C/CuS, C/ZnS and C/FeS utilizing ultrasound induced wet impregnation method. The adsorbents were subjected to characterization utilizing BET, XRD, FTIR and SEM and were tested for its mercury adsorption capacity. The adsorption capacity of the metal sulfide porous carbons increased **nearly three to four fold times** with increase in adsorption temperature from 50 to 100°C attributed to the predominance of the chemisorption. Among the three metal sulfide based porous carbons C/CuS was found to exhibit highest adsorption capacity of 23 mg/g at 100°C.

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