**Effective, Low Cost Recovery of Toxic Arsenate Anions from Water Using Hollow Sphere Trapper Geodes**

Because of the devastating impacts of arsenic to terrestrial and aquatic organisms, recovery, removal, disposal and management of arsenic-contaminated water has a considerable challenge and become an urgent necessity in the field of water treatment. This study reports control fabrication of low-cost adsorbents based on microscopic NiO hollow sphere geode-shelled a 100 nm of poly-CN nano-sphere particles-like nodules of poly-carbon nitride that intrinsically stacked and wrapped around the hollow nest spheres to form 500-700 nm shell. This C-, N-doped NiO hollow sphere adsorbent (named CNN) with multi-diffusive open-pore holes, and caves with connective open macro/meso-windows along the entire and well-dispersed hollow sphere particles lead to create trap vesicles for capture/extraction/separation of arsenate (AsO43 -) species from an aqueous solution. The CNN considered as potentially attractive adsorbent for AsO43 - species due to (i) superior removal/trapping capacity from water samples, and (ii) selectively AsO43 - trapping from real sample water that mainly includes chloride and nitrate anions and Fe2+, and Mn2+, Ca2+, and Mg2+ cations. The structural stability of hierarchal geodes in trap vehicle-shaped nests after 20 reuse/cycles without significant decrease in recovery efficiency of AsO43 - species was evident. For affording control of low-capital adsorbent and toxin waste-management, such superior CNN dead-end AsO43 - trapping/recovery system may lead to the following; (i) evidently enabled continuous control on the AsO43 - disposal management to re-diffuse or spread in water scarcity environment, and (ii) economically presented low-cost and eco-friendly CNN adsorbent for AsO43 - species, and (iii) selectively produced water-free-arsenate species. These CNN trapper geodes show potential to be excellent adsorbent candidates for environment remediation tools and humanhealthcare from toxicants..