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**Subject: Development, Implementation and Global Application of Hybrid Ion Exchanger Dispersed with Nanoparticles in Water Treatment**

To whom it may concern,

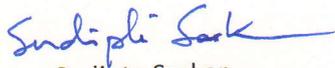
I have been involved for nearly a decade now with the research, development, validation and implementation of hybrid ion exchanger dispersed with nanoparticles (HIX-N) materials for their use in water treatment. Specifically, during my post-doctoral research work at Lehigh University, I was involved in validation and implementation of a variety of HIX-N that was used for selective removal of trace concentration of arsenic from contaminated waters. In addition, I have co-authored several research papers in peer-reviewed journals and presented at international conferences on the arsenic selective HIX-N. HIX-N based materials are increasing popularity and as per my knowledge, these materials are now commercially available in the global market.

According to my experience, HIX-N is a polymer-based, trace contaminant-selective adsorbent, which is durable, robust, and amenable to regeneration and reuse for multiple cycles. Composition-wise, it is primarily a polymeric ion exchanger, inside which nanoparticles of hydrated metal oxides have been irreversibly dispersed. The selectivity for the trace contaminants depends on the type of metal oxide that has been dispersed as well as on the solution chemistry such as pH of the contaminated water. The HIX-N offers major advantages over commonly used adsorbents such as activated alumina on the account of performance as well as on chemical stability.

Based on my rather long professional experience and knowledge of these materials, I believe that HIX-N materials will find increased application in India and other countries where geogenic contaminants such as arsenic, fluoride, and/or phosphorus in drinking water are causes of concern primarily because <sup>of</sup> the people's dependence on groundwater.

The views expressed above are my personal views only and in no way can be construed as an official endorsement from Indian Institute of Technology Roorkee.

Sincerely,

  
Sudipta Sarkar