**Synthesis and application of alumina supported nano zero valent zinc as adsorbent for the removal of arsenic and nitrate**

Arsenic and nitrate are ill-famed environmental pollutants that are responsible for various lethal diseases. Their removal from drinking water is very essential. In present study, newly synthesized alumina supported nano zerovalent zinc (Alumina-nZvZ) has been tested to remove arsenic and nitrate. Quantitative analyses of arsenic have been performed spectrophotometrically and while that of nitrates ions colorimetrically. After optimization of time and amount of adsorbent, Langmuir, Freundlich and D-R isotherms were applied to determine different parameters for the assessment of adsorption. Synthesized samples were characterized by scanning electron microscopy (SEM) to evaluate porosity and void size. Alumina coated with reduced ZnCl2 showed better efficiency for removal of arsenic and nitrate ions. Kinetics of adsorption was evaluated by using pseudo first-order and pseudo second-order rate equations.