



Contribution ID: 336

Type: Oral Presentations

## Goethite functionalised cyclodextrin nanosponge for the removal of organic, inorganic and microbial contaminants from drinking water

*Tuesday, 29 January 2019 17:00 (15 minutes)*

More people die globally from consuming polluted water than are killed by all forms of violence including wars [1,2]. In Cameroon, water crisis has driven the population to consuming water from sources that have a high-risk potential for infection [3], resulting to the insurgence of cholera outbreaks (657 deaths) [4], and increased occurrence of typhoid and diarrhoea. This paper delineates the synthesis and characterisation of goethite functionalised cyclodextrin nanosponge through ultrasound-assisted polycondensation polymerisation and its application for removal of different classes of pollutants. The as-prepared nanosponges were characterised by x-ray diffraction, transmission electron microscopy, scanning electron microscopy, Fourier transform infrared, and thermogravimetric analysis. From the adsorption tests, we observe a 99.98 % methylene blue (MB) adsorption using 0.1 g of adsorbent and 20 ppm of MB solution. At a nickel(II) and fluoride ion concentration of 50 ppm, a maximum equilibrium adsorption of 97.28 % and 71.33 % was recorded respectively after 10 mins. Studies on E Coli removal showed a removal of 83.75 %. Column adsorption for MB and nickel (II) was carried out using 20 ppm of MB solution, 50 ppm nickel (II), 1 g of adsorbent at a flow rate of 5 ml/min. After five hours for both cases, the removal of these species was still in the 99.93 -99.96 % range. This result demonstrated the affinity of the as- prepared nanosponges to bind and remove effectively different classes of pollutants from water and its potential for point-of-use water purification systems.

**Primary author:** Dr CHE RANDY, Nangah (University of Yaounde, Cameroon)

**Presenter:** Dr CHE RANDY, Nangah (University of Yaounde, Cameroon)

**Session Classification:** PCCR2

**Track Classification:** PCCR2