Removal of Water Contaminants Using Enhanced Ceramic Filtration Materials

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APPLICATIONS

Potable or Drinking Water, Point-of-Use Filtration Systems, Arsenic Remediation, Water treatment Plants, Pharmaceutical or Analytical Laboratories etc.

TARGET PROBLEMS

- Arsenic contaminated drinking water is one of the greatest threats to the public health
- Chromium Cr(VI) is recognized as one of the most wide-spread heavy metal pollutants is the ground water world wide
- Arsenic exists as As(III) and As(V) in water and As (III) requires oxidation for effective removal
- Existing technologies are usually effective in As(V) removal with very few that are effective in As(III) removal
- Bacteria and virus in water represent major health threat, particularly in developing countries

KEY BENEFITS

- **MULTIPLE SELECTIVITY**- Filtration material developed can be used for Arsenic, Chromium, bacteria and virus removal from drinking water
- **As(III) REMOVAL-** Ceramic filtration material has shown rapid and effective removal for both As (III) and As(V)
- **LOW COST** – The filtration material developed is affordable, low maintenance and environmentally friendly
- **FLOW RATE -** Can be used as column or batch filtration systems and varying flow rates
- **EASY TO USE AND SCALABLE**– The technique is easy, offers robust filtration system that can be scaled up

TECHNOLOGY

Inventors at University of Wisconsin-Milwaukee have developed ceramic filtration material with optional Lanthanum coating that is capable of effective removing heavy metals such as arsenic, chromium along with bacteria and virus making the water safe for consumption. The ceramic materials developed are fabricated and coated using naturally abundant and /or reusable materials. Porous ceramic materials are prepared with the use of earth abundant clay minerals as substrates and organic wastes as pore forming materials and are fabricated into various shapes for the desired filtration method.

Current invention utilizes high affinity of lanthanum for arsenic and chromium removal, and tunable porosity of ceramic materials consisting of clay minerals and organic wastes for bacterial and virus removal at desired flow rates.

INTELLECTUAL PROPERTY

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