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Low Temperature Synthesis of Aluminum Oxide Inside Porous Media

Many countries are experiencing an increase in nitrate and fluoride contamination to their water supply due to the increase in fertilizer runoff, and aging infrastructure. Filter media is anything within a filter that changes that quality of water flowing through it. There and many types of media to choose from depending on the circumstances of one's environment. Hybrid filtration media uses multiple elements within the filter housing to remove impurities from water. However, this method can be expensive, and affects the material characteristics of the elements used negatively due to the fact that it is treated at high temperatures. Therefore, there is a need for a hybrid filtration media that is treated at low temperatures.

Researchers at ASU have developed a method for synthesizing alumina at room temperature into porous media. Low temperature synthesis permits superior flexibility in commercial implementation and an energy efficient process. Additionally, this hybrid filtration media improves the removal of contaminates up to ten times than that of competitors while reducing cost.

Potential Applications

- Removal of Water Contaminants
- Removal of Gas Contaminants

Benefits and Advantages

- Lower Costs – Removes the need for calcination and acidification pretreatment
- Improves – fluoride and nitrate removal from aqueous solutions
- Protects – Material characteristics of media

For more information about the inventor(s) and their research, please see

Dr. Paul Westerhoff's directory webpage

Dr. Kiril Hristovski's directory webpage

Dr. Shahnawaz Sinha's directory webpage