Potential application of PAN (polyacrylonitrile) derived activated carbon fibers for water decontamination

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Activated carbon fibers are active materials that, unlike traditional coals can be transformed into any textile artifact. They have a diameter between 10 and 15 m and have resilience, lightness and chemical resistance. Through pyrolytic process followed by thermal oxidation, the carbon fibers are produced and converted into the activated carbon fibers (ACF), with a high fraction of microporosity and adsorptive capacity. Nanoengineered materials are used in wastewater treatment plants due to its antimicrobial activity. It is known that most of the Brazilian population suffers from lack or poor sanitation conditions. This study aimed to assess the potential application of a PAN fibers (polyacrylonitrile) derived activated carbon fabricfor water decontamination. We evaluated the filtration and contact antimicrobial capacity of the ACF fabric using a solution containing *Escherichia coli* to simulate water fecal contamination. The silver concentration and period were directly proportional to the antimicrobial activity of the fabric, proving that the period of time is important for the silver to inactivate bacterial growth. The ACF fabric produced by the LABEMAC showed to be potentially applied for water decontamination purposes.