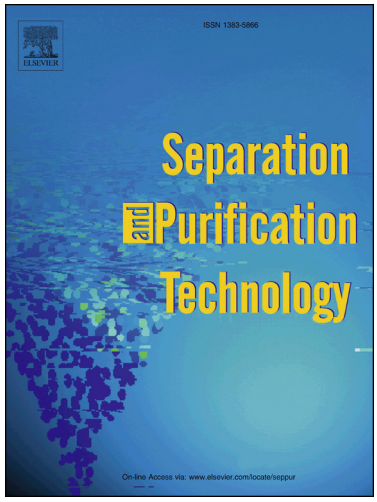

Characterization and evaluate the efficiency of different filter media in removing nanoparticles

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PII: S1383-5866(16)30894-2
DOI: http://dx.doi.org/10.1016/j.seppur.2016.11.010
Reference: SEPPUR 13343

To appear in: *Separation and Purification Technology*

Received Date: 30 June 2016
Revised Date: 26 October 2016
Accepted Date: 9 November 2016

Please cite this article as: A.C.C. Bortolassi, V.G. Guerra, e.M.L. Aguiar, Characterization and evaluate the efficiency of different filter media in removing nanoparticles, *Separation and Purification Technology* (2016), doi: http://dx.doi.org/10.1016/j.seppur.2016.11.010

CHARACTERIZATION AND EVALUATE THE EFFICIENCY OF DIFFERENT FILTER MEDIA IN REMOVING NANOPARTICLES

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Abstract – Nowadays, removing nanoparticles in a filtration using fibrous filter media become a technique very useful. There are a lot of applications of these filters which can be found in air conditioner and clean rooms. Filter media used in this work have very similar characteristics and among them can be cited heterogeneous distribution and small diameter fibers. There are little studies about the performance of fibrous filter media in removing nanoparticles. So, the aim of this work was evaluate the fiber diameter, permeability and efficiency of HEPA (High Efficiency Particulate Air Filter) filters with glass and quartz fibers in 5g/L sodium chloride solution by the technique of electric mobility. It was possible to simulate a contamination of nanoparticles through the experimental system in a stream of ultrapure air using surface speed 0.05 m/s and flow rate 1.59 L/min, which was done the particle count before and after passing through the filter media. HEPA_2 filter showed the lower permeability and the HEPA_1 filter the higher. In general, both filter media were very efficient in removing nanoparticles during the filtration because of the fibers distribution is heterogeneous. But HEPA_2 filter showed lower penetration