Design of a Continuous Penta-Membrane Hybrid Filter for Absolute Filtration Water

Mutai, Shylah (School: Machakos Girls High School)
Mutai, Olyviah (School: Machakos Girls High School)

This project deals with the design, assembly, characterization and analysis of a five step water filtration system. The principles of material science, solid state physics, polymer physics, chemical engineering and structural engineering are employed in the development of this absolute water filter. The filter addresses gaps in single and dual filtration systems since it’s continuous and offers an absolute filtration matrix by including the novel surfactant modified polymer membrane. The multi composite filtration batches offer absolute filtration and delivery of quality clean water. Knowledge on material science will assist in development a multi-composite filter that can correlate effluent and affluent water based on the membranes properties. pipe, ball valve, connectors, male socket holding tank, 12 V DC surface water pump, membrane holders, 4 different types of membranes, chitosan-PAA blended membrane, membrane rings, joint locks, pair of scissors, pipe range, pliés, tangit glue, DMAC, Chitosan, gluteladehyde, glass plates, filter stoppers and filter locks water samples spatula. The procedure involves Water samples collection, design and assembly of the filtration chambers, synthesis and characterization of the filter membrane and then filtration. Unfiltered Water is then pumped into the system. The flow rate can be adjusted using the ball valve and the pump speed. The ion concentration of physiochemical properties are measured at the end of the filtration process evaluate effectiveness of the penta-membrane filtration. The results show that there is absolute filtration and the filter is suitable for clean safe drinking water. The primary objective of this research work is achieved water borne diseases can be reduced significantly in Kenya and Africa.

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