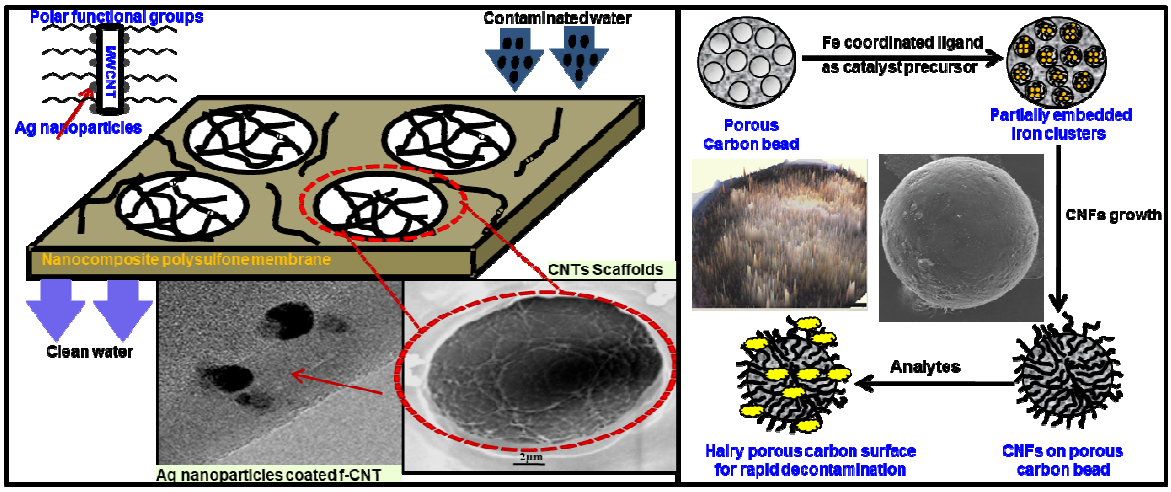
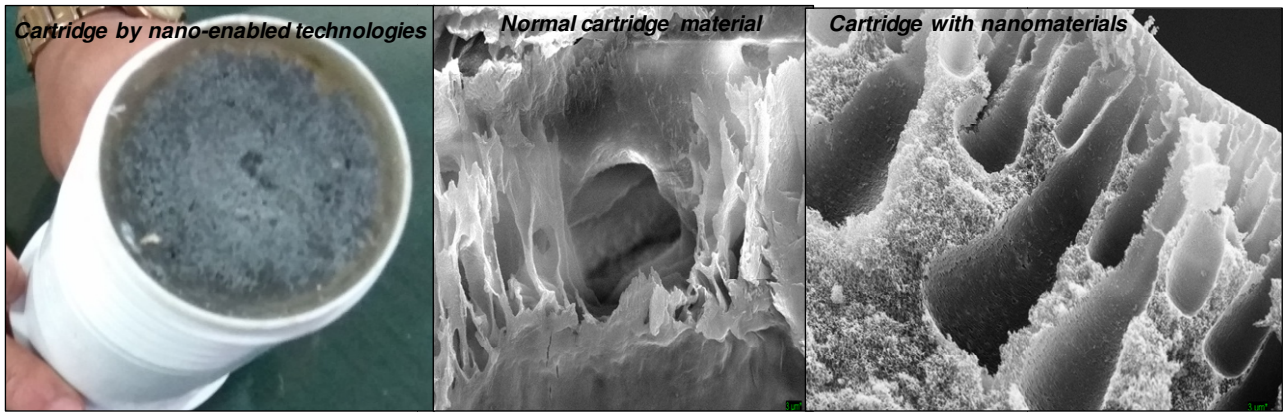
Filtration cartridges and prefilters using nano-enabled technologies

The 'well-ordered' pore architectures of polymeric membrane were controlled by introducing silver nanoparticles decorated functionalized carbon nanotubes into polymer matrix to facilitate the adsorption of analytes on polar nanotube surface. The hairy textured topologically controlled 'nano on micro' porous carbon geometries were also developed in order to get an active surface for rapid immobilization.



Prototype of cartridges was fabricated, for rapid elimination of toxic metals on the surface of multifunctional nanomaterials, which could fit into commercially available water purifiers. Fluorescent colour changing mechanism was devised to remote sensing the performance of cartridges for usage, leaching of nanomaterials and efficacy of decontamination.



The mobile flexible filtration cartridge version which does not use any chemical or electrical power for purification was developed using the free-standing composite nanofibers as pre-filter membrane for additional decontamination and disinfection.