

ABSTRACT OF THE DISCLOSURE

The invention relates to a liquid sample preparation device such as a disposable, collapsible, flexible polymeric bag containing an adsorptive curtain of a functionalized shaped polymeric fiber bed for the direct capture of biomolecules from liquid samples. The functionalized shaped polymeric fiber bed includes fibrillated, ridged or winged-shaped fiber structures that significantly increases the surface area of the fiber resulting in enhanced separation, retention and/or purification of liquid samples containing biomolecules of interest as the liquid samples contact the adsorptive curtain of functionalized shaped fibers. Liquid samples include unclarified liquid feeds or other liquids containing one or more biomolecules of interest, including, but not limited to vaccines, recombinant proteins, cells, stem cells, monoclonal antibodies (mAbs), proteins, antibody, peptides, oligopeptides, nucleic acids, oligonucleotides, RNA, DNA, oligosaccharides and polysaccharides.