What is claimed is

1. A method for purifying a biomolecule selected from protein antibodies from a mixture containing impurities comprising:

a. providing an assembly comprising providing a first container having an interior space, a first base sealingly affixed to said first container and supporting at least one first membrane sealed to said first base for filtering said mixture; an outlet in said base, a second container in fluid communication with the outlet of said first base, and a second base sealingly affixed to said second container, said second base comprising a second membrane and a membrane supporting surface, wherein said first container, first base, second container and second base are all assembled in said assembly;

b. providing the mixture at a set of conditions selected from pH, salt concentration, temperature, light electric field,

c. adding one or more polymers, soluble in said mixture under the set of conditions and capable of reversibly and selectively binding to the biomolecules,

d. mixing the one or more solubilized polymers throughout the mixture;

e. precipitating the one or more polymers and bound biomolecules out of solution by changing the set of conditions in the mixture;

g. recovering the bound biomolecules from the polymer and filtering the biomolecules through said second membrane;

wherein the one or more polymers is selected from the group consisting of poly(N-vinylcaprolactam), poly(N-acryloylpiperidine), poly (N-vinylisobutyramide), poly(N-isopropylacrylamide), poly(N,N'-diethylacrylamide), poly(N-isopropylacrylamide), poly(N-acryloyl-N-alkylpiperazine), hydroxyalkylcellulose, copolymers of acrylic acid and methacrylic acid, and polymers and copolymers of 2 or 4-vinylpyridine and chitosan with either a ligand or functional group attached to it.

2. The method of claim 1, wherein the biomolecules is an antibody selected from the group consisting of a recombinant antibody, a recombinant monoclonal antibody, a polyclonal antibody, a humanized antibody and an antibody fragment.

3. The method of claim 1, wherein said biomolecules is a protein.

4. The method of claim 1, wherein the impurities are selected from the group consisting of cells, cell debris, host cell proteins and DNA.

5. The method of claim 1 wherein the membrane supporting surface comprises grooves for fluid flow.

6. The method of claim 1, wherein said set conditions is pH or temperature.