branes, tubes or hollow fibers which are easy to fabricate by following the process of this invention.

The porous body can be used for chromatographic applications and as a carrier for biologically active materials such as antigens, antibodies and enzymes. As a catalytic support, the porous body will find applications in chemical process industries like petroleum refineries and in the catalytic converters of internal combustion engines.

The porous body of this invention is a strong absorbent for certain types of molecules which may be solids, liquids or gases. As an absorbent, it can purify liquids and gasses like purification of air in an enclosed space and purification of beer and wine. It can be used as a drying agent to remove moisture from a system. It can be used to separate a mixture of gases and mixture of liquids which are not readily separable by any other means. An example is the separation of n-hexane and n-octane.

The porous body of this invention is a very good medium for ion exchange. The exchange is conveniently done by following the procedure disclosed in pending application, Ser. No. 832,230, filed Sept. 12, 1977, by M. Samanta. A prospective use will be purification of of nuclear waste liquid containing radiocesium Cs^{137}. When a porous body immersed in waste liquid is treated with NH_3, Cs^{137} will be absorbed in the porous body and other radioactive impurities like radiostrontium will be precipitated. The precipitate and porous body will be separated from the liquid which will thus be free from the radioactive material. The precipitate can be properly sealed in a suitable container and the porous body can be consolidated before disposal of the concentrated waste. An alternate procedure will be to exchange the protons in the porous body with Li^+, Na^+ or K^+ and then treat the nuclear waste liquid with the exchanged porous body whereby all the radioactive cations will be absorbed within the porous body. A porous body exchanged with an alkali metal cation can be used for water softening, absorbing Ca^{++} and Mg^{++} during the process.

The porous body prepared by this invention is hydrophilic and it has strong affinity for water. A membrane made from the body is readily wetted by water. The membrane will allow the water to pass through, but no air or gas entrained in the liquid will be able to pass. This property makes the membrane useful for intravenous injection devices where passage of air into the veins has to be prevented by all means.

The porous body prepared by this invention can be made hydrophobic by coating the hydrophilic surface with a hydrophobic material or by deactivating the surface hydroxyl groups. A membrane made from a body so treated will not be wetted by water. The membrane will allow air to pass through, but no water entrained in the air will be able to pass. Typical use of the membrane will be in the design of vents. The hydrophobic porous body has a strong affinity for gasoline and oil. So, it can be used for removal of water from gasoline and for removal of oil slicks from sea water.

The porous body can be used as filter and reinforcement for polymeric material and as a thermal insulator for home and industry. It can be used as an intermediate in processes for making foam glasses.

Other uses of the porous body made by this invention are as an electrolytic separator in an electrochemical cell, as a microorganism-impervious cover for medical containers, as a matrix for a composite super conductive body and as a carrier for dynamically produced reverse osmosis membranes.

The consolidated glass having a composition profile will have two basic uses. One will be glass strengthening, wherein glass will have a compressive skin because of the composition profile. Typical uses may be in high strength radar homes, and in chemical strengthening of laboratory and commercial glassware. The second basic use will be in fiberoptics. Because of the very high purity and the composition profile, glass will be used in making step-index and graded index optical fibers for optical communication and medical endoscopy.

The proposed uses of consolidated glass without any profile potentially are many. This invention permits the making of glass within such wide limits of composition that virtually any desired mechanical, chemical, optical and dielectric property can be obtained by selecting a suitable composition. Important uses of consolidated glass should include the uses related to household glassware, general laboratory equipment, packaging for electronic components, mirror blanks for astronomical telescopes, acoustic delay lines, windshields for supersonic vehicles, accessories for thermonuclear reactors, and nose cones for intercontinental ballistic missiles.

Of course, many variations and modifications of the subject invention are possible in the light of the above teachings. It is, therefore, to be understood that within the scope of the appended claims, the invention may be practiced otherwise than as specifically described.

I claim:

1. A method for the synthesis of a porous self-supporting body, comprising the steps of:

providing a first solution containing at least one basic glass forming solute wherein said at least one basic glass forming solute is selected from the group consisting of borates, aluminates, silicates, germanates, stannates, plumbates, phosphates, arsenates, antimonates, bismuthates, selenates, tellurates, zirconates, titanates, tungstates, vanadates and molybdates;

providing a second solution containing at least one acidic solute wherein said at least one acidic solute is selected from the group consisting of acids and salts of strong acids and weak bases;

providing in contact with and separating said solutions a permeable barrier substantially impermeable to said at least one basic solute and substantially permeable to said at least one acidic solute; and

permitting said second solution to pass through said barrier to react with said first solution to deposit on the side of said barrier in contact with said first solution a porous self-supporting body.

2. The method of claim **1** wherein said permeable barrier is a dialyzer membrane.

3. The method of claim **1** wherein said first solution is a true solution.

4. The method of claim **1** wherein said first solution is a colloidal solution.

5. The method of claim **1** and including the step of varying the time during which said solutions are in contact with said barrier so as to obtain a certain thickness for said deposited self-supporting body.

6. The method of claim **1** wherein said deposited self-supporting body is crystalline.

7. The method of claim **1** wherein said deposited self-supporting body is partially vitreous and partially crystalline.