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(54) **METHOD FOR PRODUCING HIGH DIELECTRIC STRENGTH MICROVALVES**

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(52) **U.S. Cl.** **427/487**; 427/554; 427/235

(58) **Field of Classification Search** 427/230, 427/235, 487, 553, 595, 508, 554, 596
See application file for complete search history.

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(57) **ABSTRACT**

A microvalve having a cast-in-place and lithographically shaped mobile, polymer monolith for fluid flow control in microfluidic devices and method of manufacture. The microvalve contains a porous fluorinated polymer monolithic element whose pores are filled with an electrically insulating, high dielectric strength fluid, typically a perfluorinated liquid. This combination provides a microvalve that combines high dielectric strength with extremely low electrical conductivity. These microvalves have been shown to have resistivities of at least 100 GΩ and are compatible with solvents such as water at a pH between 2.7 and 9.0, 1-1 propanol, acetonitrile, and acetone.

10 Claims, No Drawings