

PATENT NO. 373980
A SYSTEM FOR OPTOFLUIDICALLY CONTROLLED FLUID MOTION FOR VARIETY OF MICROSCALE APPLICATIONS

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APPLICANT
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ABSTRACT

An optofluidically guided microfluidic valve system adapted to selectively direct fluid flow in any junction based fluid flow in micro confinement and a method for such control of fluid flow direction. The microfluidic system could be fabricated involving standard photolithography and soft lithography for forming microchannel walls. The optofluidically guided device makes use of the modification of the surface properties of coated substrate by selective exposure to UV light for flow diversion/actuation. The system would favour light influenced fluid motion/flow diversion, any branching configuration for flow diversions and valving using optofluidic mechanism. The optofluidic/light driven direction control of the fluid motion on photo responsive material in microscale applications with ease of integration and reconfigurability especially in valve design is a distinct advantage for a number of microchannel based fluid flow control applications importantly in bio-medical and pharmaceutical industries.

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CLAIM 1

A system for optofluidically controlled fluid motion for variety of microscale applications comprising, a substrate coated with photosensitive material in combination with microstructures providing desired microchannel for fluid flow in confinement; atleast one inlet and atleast one outlet for provision of the fluid flow in said microchannel; and light source of requisite energy depending on band-gap of the photosensitive material of the said substrate for selective exposure on the photosensitive surface on the substrate and modify hydrophilic property of the surface making the surface exposed to the light more hydrophilic causing the fluid move to the exposed path thus providing desired selective optofluidic control of the motion of the fluid in said microchannel.