Fast Responding Energy Efficient Anisotropic Organogels

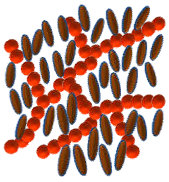
Liquid crystal (LC) fluid immobilized by 3-D network of fibres formed due to non-covalent interactions between low molecular weight organogelator molecules

Pristine LC

Flows like a liquid

LC Gel

Immobile like a solid



Device geometry

Gel sandwiched between conducting transparent electrodes with alignment layers

•No electric field

"OFF" state

•With Electric field

"ON" state

Device parameters	Conventional LC device	LC gel device
Switch "OFF" time	~200 ms	~ 2 ms
Switch "ON" time	Comparable values (~0.6 ms)	
Threshold voltage	2-3 V	2-3 V
Undesirable "Backflow"	Present	Absent
Contrast ratio	Comparable values	
Mechanical strength (Viscosity)	Low* 0.01 Pa S	High 1000 Pa S

*Viscosity of water ~0.001 Pa S

Possible Application Areas

Low energy consuming fast responding display devices* that require mechanical shock-resistant operations

*Devices can be rigid or flexible

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