



# Nanostructured Polymers

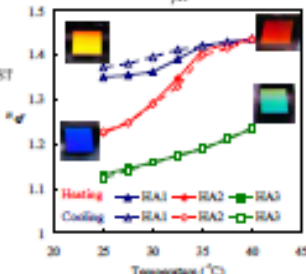
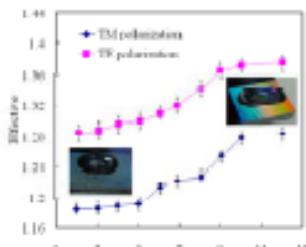
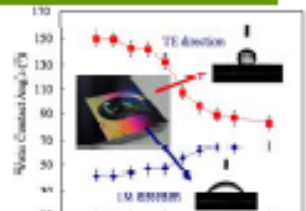
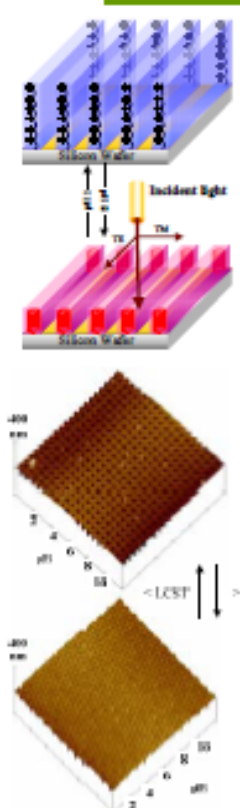


**Jem-Kun Chen**

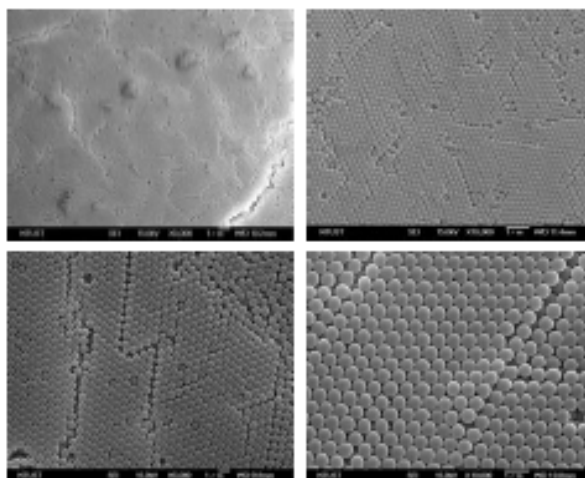
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- 1) Surface Patterned Polymer
- 2) Ordered Polymer Sphere Array
- 3) Hydrophobic Polymer Fiber

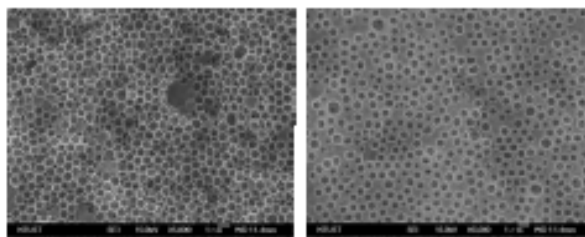
## Diffraction Grating



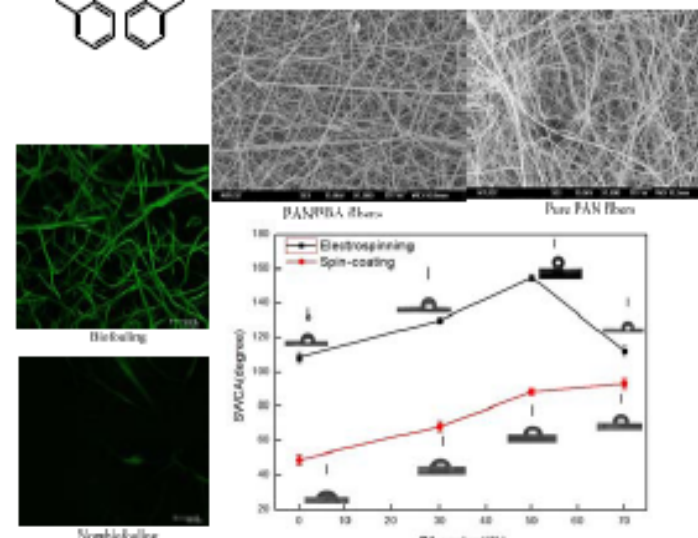
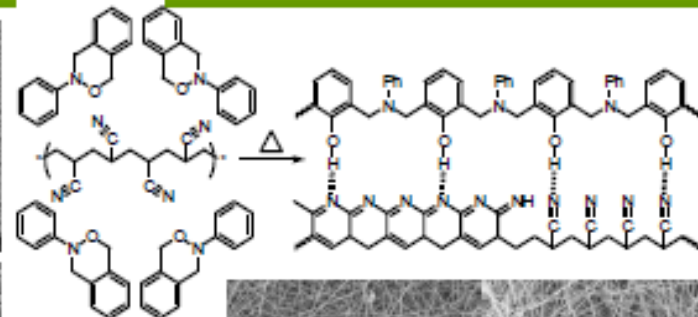
## Photonic Colloidal Crystals



## Porous Polymer Film



## Non-biofouling Nanofiber



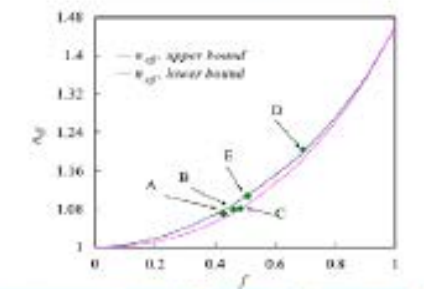
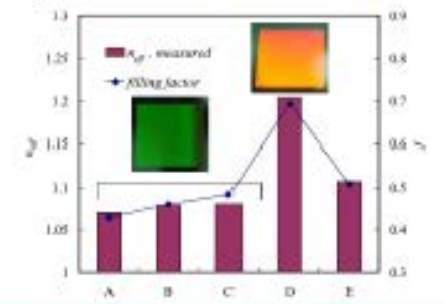
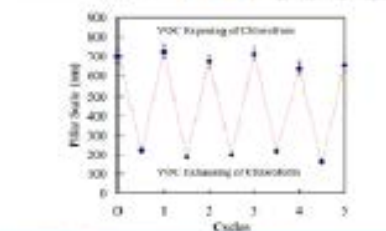
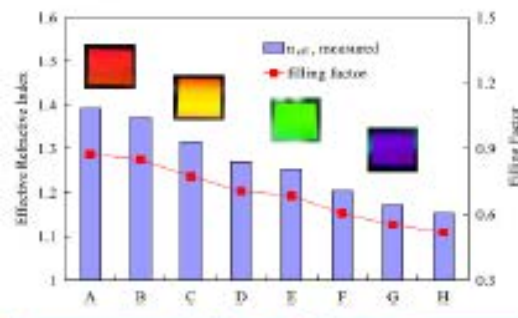
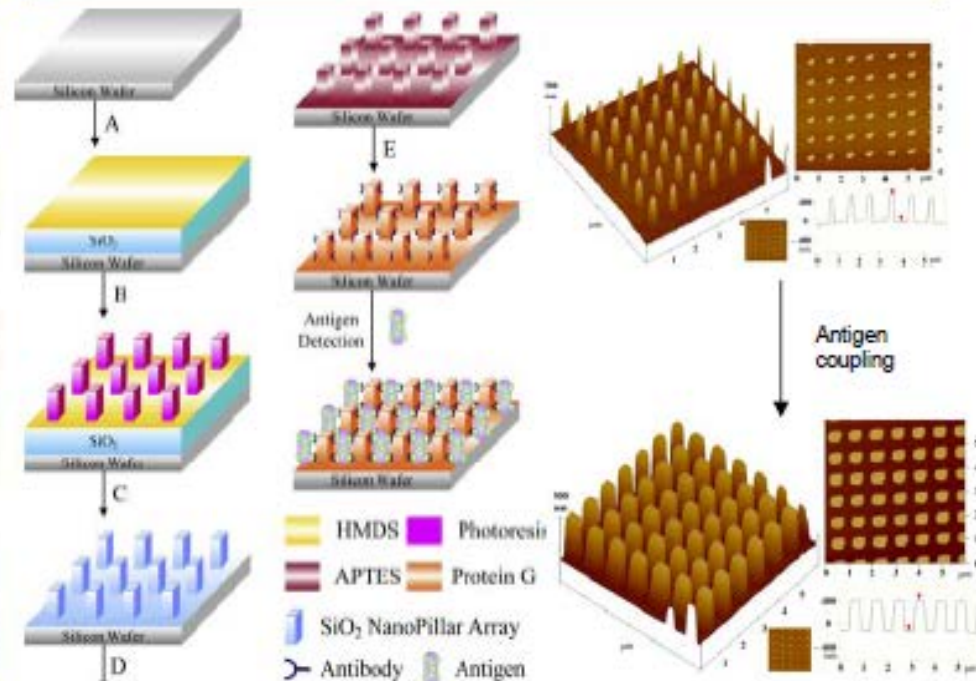
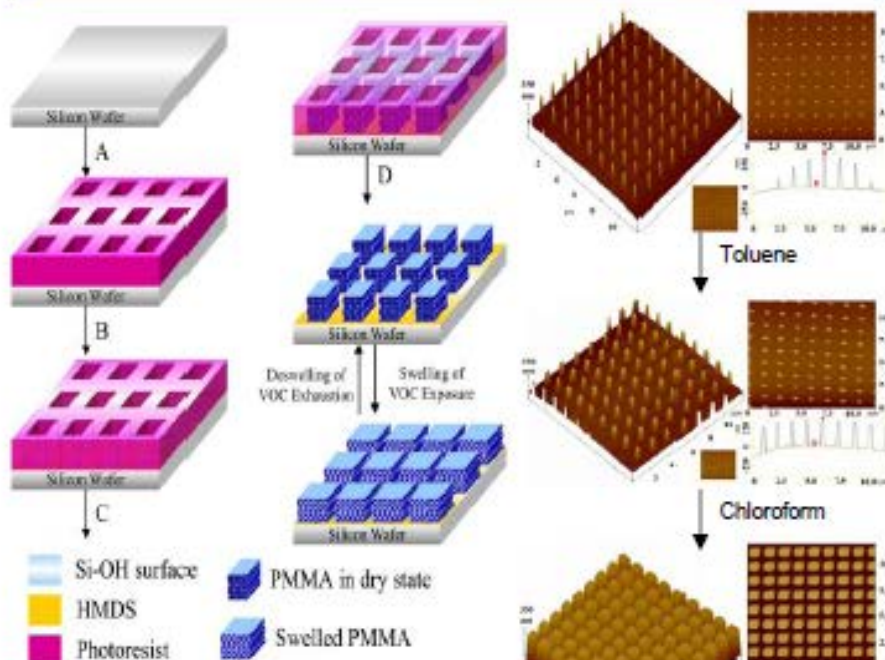


# Optical Sensor of Diffractive Grating



## VOC 2D Periodic Relief Grating sensor

## 2D Periodic Relief Grating Biosensor

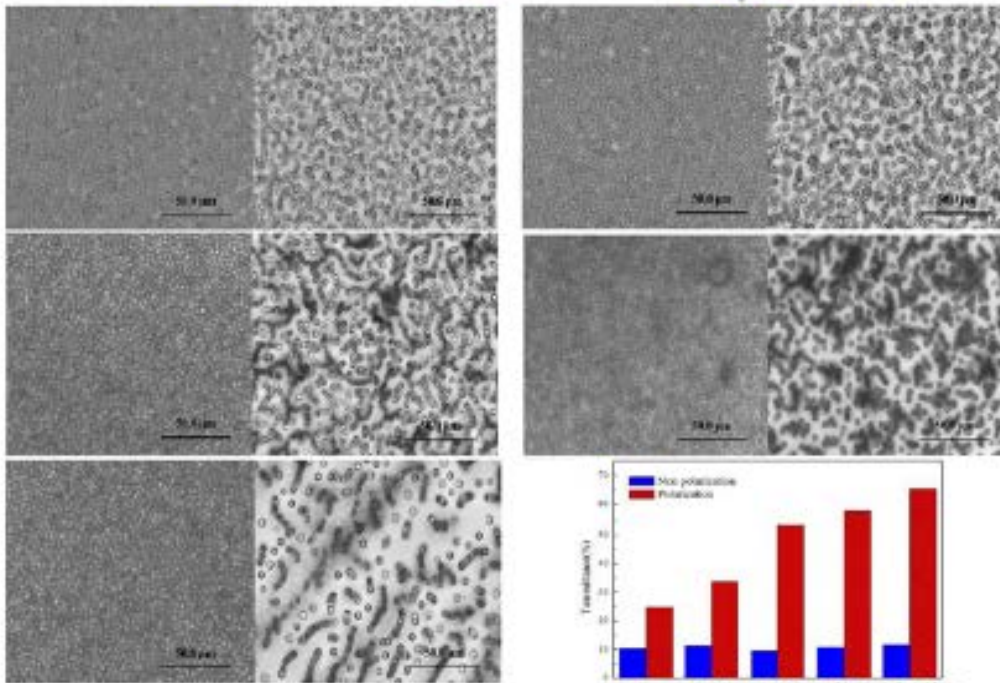
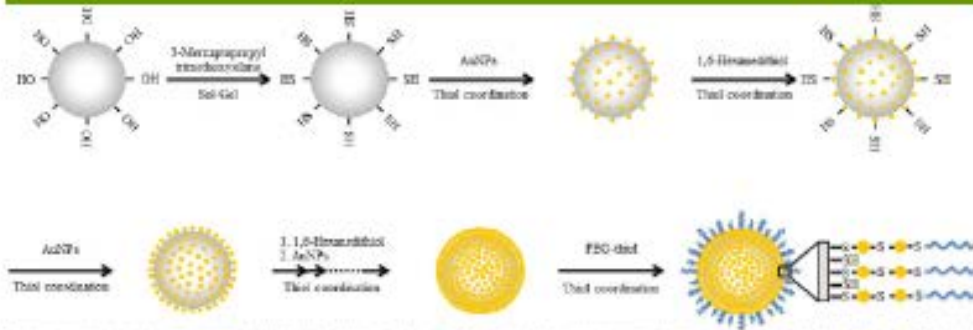




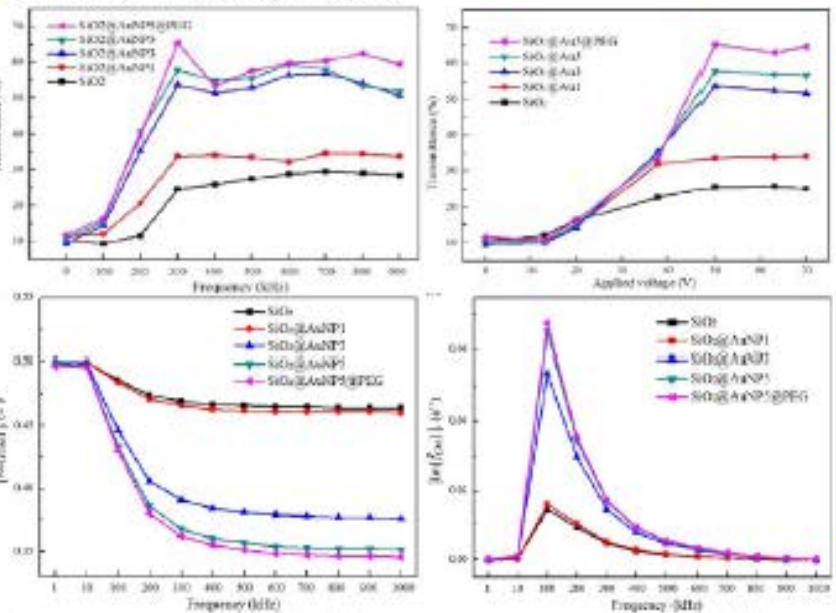
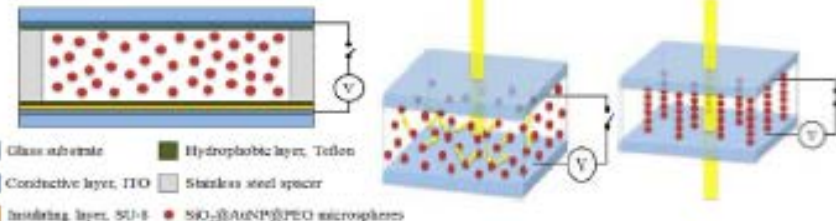
# Magnetic/Electrorheological fluid



## Fabrication of core/shell SiO<sub>2</sub>/AuNP Spheres



## Display Device encapsulated the Spheres



sample	no. of microspheres <sup>a</sup>		dipping ratio (%)	area ratio (%)	
	compensation	polarization		compensation	polarization <sup>b</sup>
bare ITO	3300 ± 300	1300 ± 300	46.9	3.1	39.3
SiO <sub>2</sub> @AuNP1	2400 ± 200	1200 ± 200	53.9	3.5	35.3
SiO <sub>2</sub> @AuNP2	2700 ± 200	1000 ± 200	62.9	3.8	31.8
SiO <sub>2</sub> @AuNP3	3000 ± 200	800 ± 200	69.2	3.7	28.2
SiO <sub>2</sub> @AuNP@PEG	2700 ± 200	500 ± 200	80.9	3.8	21.6

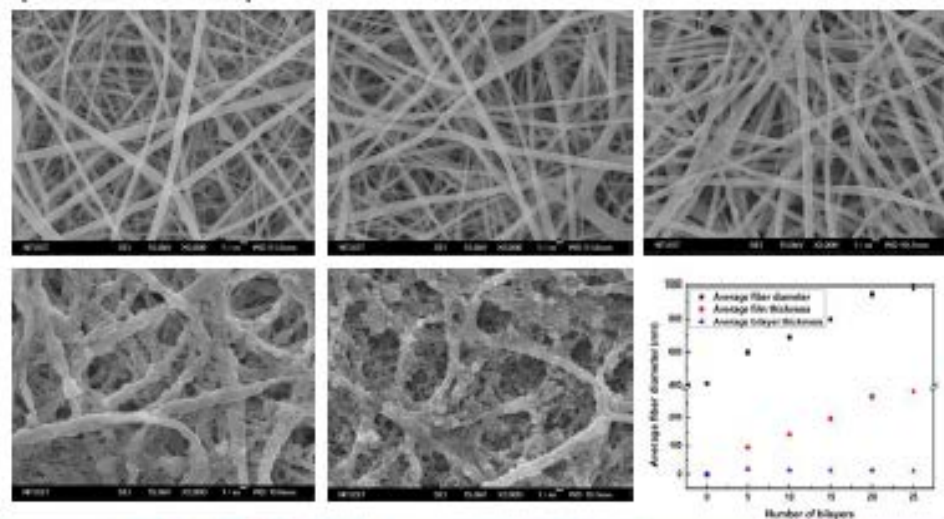
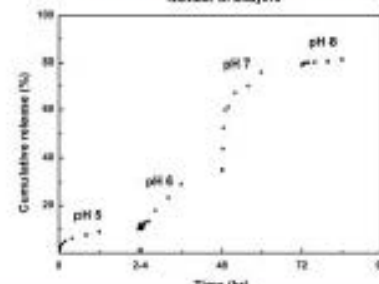
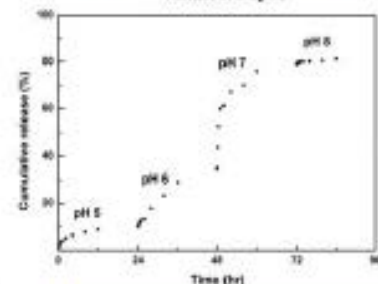
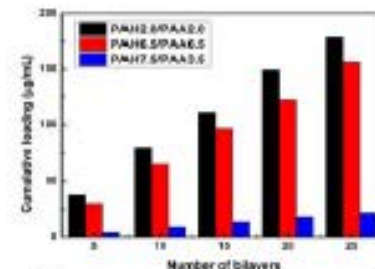
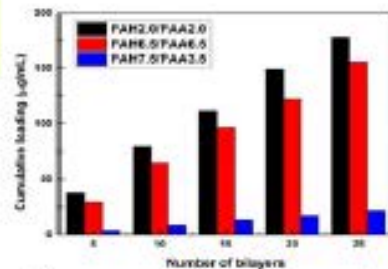
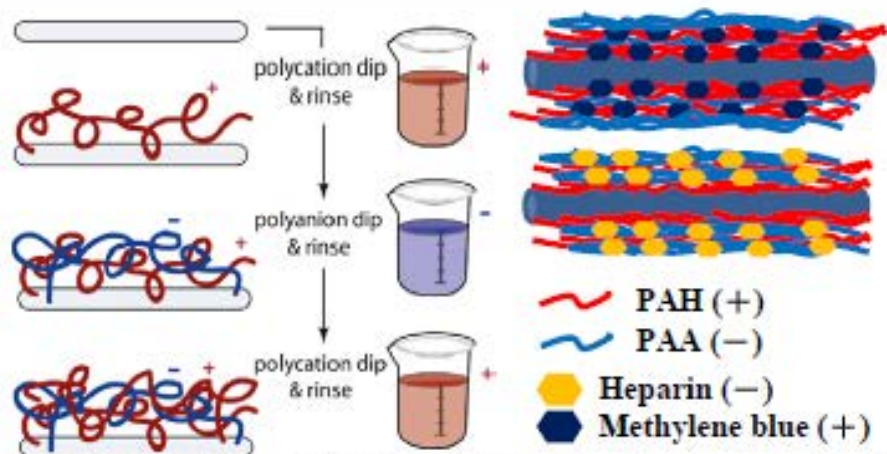
<sup>a</sup>Number of the microspheres is counted from top-view images of the display in an area of 175 × 130 μm<sup>2</sup>. <sup>b</sup>The alternating electric field at 300 kHz and 50 V of frequency and voltage, respectively, is used to polarize the display.



# Multi-functional Nanofiber



## Layer-by-Layer Nanofiber for drug releasing



## Bio-nonfouling Property

