

Reflective Color Display Using Fluidic Photonic Crystal

Kyeonghyeon Ko, Wonmok Lee*

Sejong University

Department of Chemistry, Sejong University, 98 Gunja-
Dong, Gwangjin-gu, Seoul, 143-747, Korea

We developed a reflective display device based on colloidal photonic crystal. By applying DC voltage, the reflective color of the charged colloidal particles could be controlled due to variation in their longitudinal spacing. Charged PS colloid was synthesized by emulsion polymerization. Reflective display cell was made between two ITO glasses by infilling PS colloidal suspension. Distance of photonic crystal lattice changed as a function of voltage, and the cell exhibited red, green and blue colors by Bragg diffraction of white light. Color reproduction of the reflective cell was as high as 13.6% to NTSC. To prevent deterioration of the ITO surface, the polymer film was spin-coated on ITO glass. PDMS and PVAc polymer films were used and their protective effect to the display device was examined.