

Abstract

Electro-Optical Full-Color Display Based on Nano-Particle Dispersions [†]

Mohammad Khorsand Ahmadi ^{1,*}, Wei Liu ², Alex Henzen ² and Hans Wyss ^{1,*}

¹ Microsystems, Department of Mechanical Engineering, Eindhoven University of Technology, 5600MB Eindhoven, The Netherlands

² South China Academy of Advanced Optoelectronics, Electronic Paper Display Institute, Guangzhou 510006, China; wei-liu@m.scnu.edu.cn (W.L.); alex.henzen@guohua-oet.com (A.H.)

* Correspondence: m.khorsand.ahmadi@tue.nl (M.K.A.); h.m.wyss@tue.nl (H.W.)

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Abstract: Electrokinetic displays are among the most important display technologies because of their low power consumption, wide viewing angle, and outdoor readability. As a result, they are regarded as excellent candidates for electronic paper. These types of displays are based on the controlled movement of charged pigment particles in a non-polar liquid under the influence of an electric field. Free charges practically do not exist in nonpolar colloids due to their low dielectric constant. However, the addition of a surfactant to non-polar colloids often leads to considerable charge-induced effects, such as increased electrical conductivity and particle stabilization. In this project, we aim to develop a novel electrokinetically driven display. An unprecedented display device is proposed, based on the concerted action of electro-osmosis and electrophoresis in a non-polar fluid. This method could reduce the switching time required to display information, and extend the applications of electrokinetic displays, enabling increased video speed and full color in the future.

Keywords: electrokinetic displays; non-polar; surfactant; electro-osmosis

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