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# Programmable Droplets for Interaction

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**Abstract**

We present a design exploration on how water based droplets in our everyday environment can become interactive elements. For this exploration, we use electrowetting-on-dielectric (EWOD) technology as the underlying mechanism to precisely control motion of droplets. EWOD technology provides a means to precisely transport, merge, mix and split water based droplets and has been widely explored for automating biological experiments in industrial<sup>1</sup> and research settings<sup>2</sup>. More recently, it has been explored for DIY Biology applications<sup>3</sup>. In our exploration we integrate EWOD devices into a range of everyday objects and scenarios to show how programmable water droplets can be used as information displays, interaction medium for painting and personal communication.

**Author Keywords**

Shape-Changing User Interfaces, Programmable Materials, Radical Atoms

**ACM Classification Keywords**

H.5.2 [User Interfaces]: Haptic I/O, Interaction Style

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<sup>1</sup>Illumina Neoprep

<sup>2</sup>DropBot - <http://microfluidics.utoronto.ca/dropbot/>

<sup>3</sup>OpenDrop - <http://www.gaudi.ch/OpenDrop/>