

Abstract Submitted
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Suspension Bridge Induced by Electrostrictive Effect in Dielectric Liquids¹ CHUANSHAN TIAN, Y. RON SHEN, Department of Physics, UC Berkeley — It has been demonstrated that upon application of a high voltage between two beakers of water, a suspending water bridge could form that connects the two beakers with a length up to a few centimeters. (see e.g. *J Phys D* **40**, 6112(2007)). The mechanism of this surprising phenomenon is not yet well understood. We show theoretically and experimentally that the bridge is the result of balance of actions of electrostriction with gravitation force and surface tension. The same phenomenon can be observed also in other dielectric liquids such as methanol, ethanol, isopropanol, and glycerol. In all cases, the experimentally measured bridge length and its dependence on the electric field and the dielectric constant and surface tension of liquid agree well with predictions from our theoretical model.

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Chuanshan Tian
Department of Physics, UC Berkeley

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