Title: Energy Harvesting using two phase fluid flow in Microchannels

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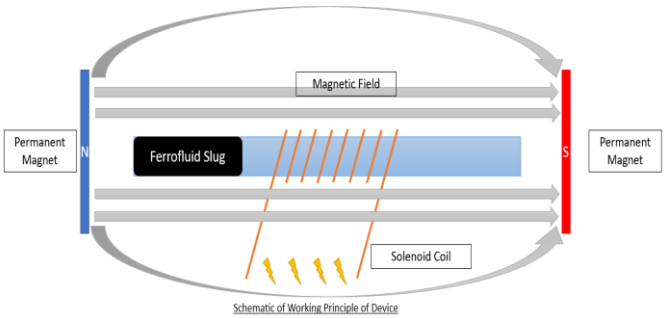
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Keywords: Ferrofluid, Microchannels, Energy Harvesting, Microfluidics for Energy Harvesting

I. Abstract Body (up to 250 words)

The present study investigated the use of hydrocarbon based ferrofluid slugs suspended in water has host liquid for harvesting ambient low wind energy in the form of potential difference. In Numerical Modelling, it was studied that oscillating a magnetized ferrofluid slug in and out of a solenoid coil generates emf large enough to be used to power up micro sensors and actuators. Besides, this study opens a new domain in the field of microfluidics. Microfluidic research's potential is not restricted to Medical Devices, Genomics and Lab-On-Chip but to a whole new dimension of the field of energy. If further researcged, microfluidic energy harvesting will be the key to make sensors and actuators run on autonomous power.

II. Image:



Schematic of Working Principle of Device

III. Reference:

1. Y. Wang et. al., Ferrofluid Liquid Spring for Vibration Energy Harvesting, IEEE 2015
2. Bibo et. al., Electromagnetic Ferrofluid based Energy Harvester, IEEE 2015
3. Jung et. al., Feasibility Study on a New Energy Harvesting Electromagnetic Device Using Aerodynamic Instability, IEEE 2009
4. T. Reissman et. al., Micro-solenoid Electromagnetic Power Harvesting for Vibrating Systems, SPIE 2008

IV. Biography:

Omkar completed his bachelor's in mechanical engineering from University of Mumbai in 2015 and completed his Masters in Mechanical Engineering from University of Texas at Arlington. He joined Integrated Micro Nano Fluidics Lab in 2017 and accomplished his research in the field of Energy Harvesting.

V. Presenting author details



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