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Mixing two miscible liquids with Faraday instability FARZAM ZOUESHTIAGH, Institut d'Electronique, de Microélectronique et de Nanotechnologie (IEMN) UMR CNRS 8520, Avenue Poincaré, 59652 Villeneuve d'Ascq, France, SAKIR AMIROUDINE, Laboratoire TREFLE, Esplanade des Arts et Métiers, F-33405 Talence, France, RANGA NARAYANAN, University of Florida, FL 32611 Gainesville, USA — The generation of waves near the interface of one or two liquid layers that is subjected to vertical vibrations is known as the Faraday instability. This instability occurs on account of a resonance that is set up when there is a tuning of the imposed frequency with the natural frequency of the free surface which possesses surface potential energy. Now if the free surface was removed by completely confining the container then no such instability could occur unless potential energy was introduced in some other way, say via density gradients. In this regard, we have recently shown experimentally and numerically that Faraday type of instability can also occur between two miscible liquids with different densities [1]. Here, we report on experimental and numerical study of Faraday instability used as a mixing tool. In particular, we characterize the mixing efficiency by the instability by measuring the size of the volume where the two liquids were fully mixed under different external vibration parameters.

[1] Zoueshtiagh, F., Amiroudine, S., Narayanan, R., *J.Fluid Mech.*, 628, pp.43-55, 2009.

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