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Contact line pinning favors the mass production of monodisperse microbubbles. JOSE MANUEL GORDILLO, FRANCISCO CAMPO-CORTES, GUILLAUME RIBOUX, Escuela Superior de Ingenieros, Universidad de Sevilla, Spain — A robust method for the generation of phospholipid covered monodisperse microbubbles of diameters $\sim$10 microns at production rates exceeding 0.1 MHz, is presented here. We show that bubbles are periodically formed from the tip of a long and thin gas ligament stabilized thanks to both the strong favorable pressure gradient existing at the entrance region of a long rectangular PDMS-PDMS channel and to the pinning of the gas-liquid interface at a centered groove of several microns width placed on one of its walls. Moreover, the long exit channel incorporated in our design, favors the transport of phospholipid molecules towards the gas-liquid interface. Our experiments show that the resulting phospholipid shell inhibit both the diffusion of the gas in the surrounding liquid as well as the coalescence between contacting bubbles. These evidences indicate that the proposed method is suitable for the generation of monodisperse microbubbles for diagnosis or therapeutical applications.

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