

Abstract Submitted  
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**Bubbles are responsive materials interesting for nonequilibrium physics** DARIA ANDREEVA, STEVE GRANICK, Center for soft and living matter, Institute for basic science — Understanding of nature and conditions of nonequilibrium transformations of bubbles, droplets, polysomes and vesicles in a gradient field is a breath-taking question that dissipative systems raise. We ask: how to establish a dynamic control of useful characteristics, for example dynamic control of morphology and composition modulation in soft matter. A possible answer is to develop a new generation of dynamic impactors that can trigger spatiotemporal oscillations of structures and functions. We aim to apply acoustic field for development of temperature and pressure oscillations at a microscale area. We demonstrate amazing dynamic behavior of gas-filled bubbles in pressure gradient field using a unique technique combining optical imaging, high intensity ultrasound and high speed camera. We find that pressure oscillations trigger continuous phase transformations that are considered to be impossible in physical systems.

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