

Morphing of particle rafts

Materials incorporated into soft actuators for robotics, medical devices, and other technologies and architectures must deform deftly and reversibly in response to external stimuli. To address that challenge, Kyungmin Son, Jeong-Yun Sun, and Ho-Young Kim at Seoul National University in South Korea used so-called particle rafts composed of a liquid-oil interface coated with dielectric hollow glass particles. The rafts morph in response to spatiotemporally varying electric fields and are further modulated by electric discharge in the air.

This image shows the shape morphing of particle rafts guided by human fingers. Because living tissues have a high capacity for charge storage, bare fingers can morph the soft-composite interface when the electrode at the bottom of the liquid is turned on. The particle rafts change from flat floors to upheaved mounds in seconds as the fingertips approach. Because the raft system can be driven by bioelectricity, it could serve as a human-machine interface. (K. Son, J.-Y. Sun, H.-Y. Kim, *Soft Matter* **17**, 7554, 2021; photo courtesy of Kyungmin Son and Ho-Young Kim.)

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