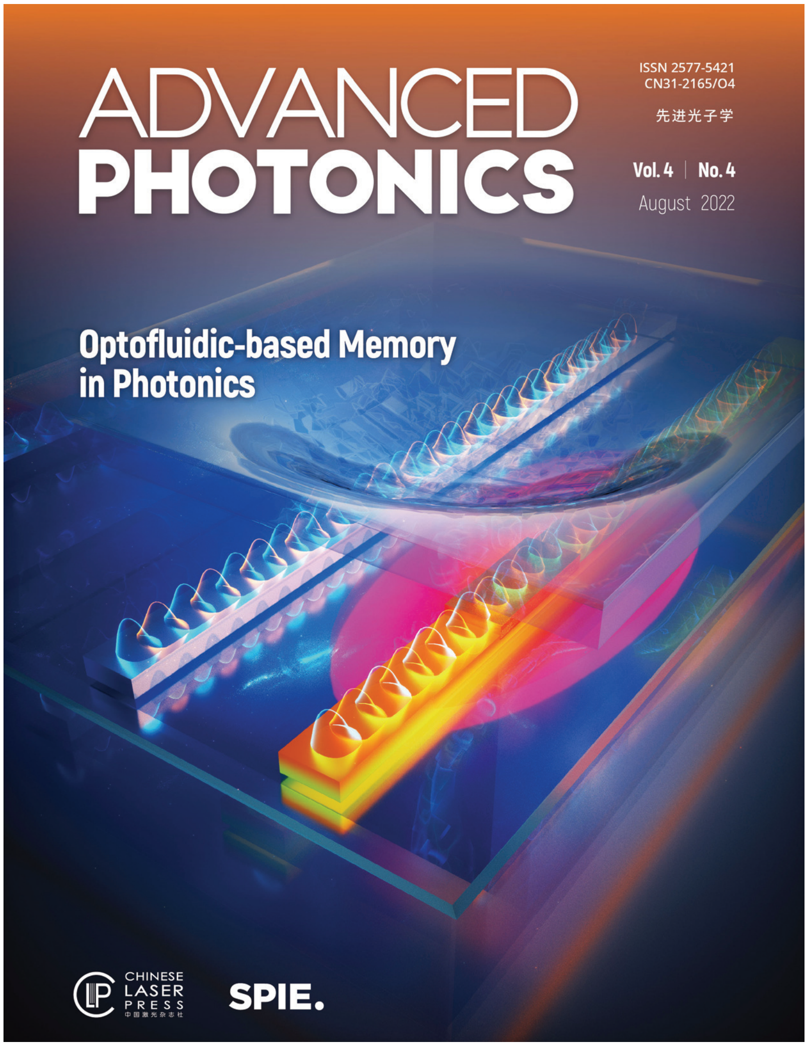

About the cover: *Advanced Photonics* Volume 4, Issue 4

The rise of mature photonic chip-scale systems opens new possibilities to investigate fundamental light–liquid interactions on a nanoscale. Researchers from University of California San Diego recently proposed a novel paradigm where liquids, which typically do not strongly interact with light on a micro- and nanoscale, support a significant mutual light–liquid interaction that enables several nonlinear-nonlocal effects. In their work, "Thin liquid film as an optical nonlinear-nonlocal medium and memory element in integrated optofluidic reservoir computer," authors Chengkuan Gao, Prabhav Gaur, Shimon Rubin, and Yeshaiahu Fainman theoretically and computationally demonstrate a two-way interaction where the photonic mode affects the liquid film geometry while the latter in turn affects propagation properties of the photonic mode.

This mutual interaction gives rise to a family of nonlinear-nonlocal effects which can be studied in the proposed chip-scale photonic circuits. The authors suggest and numerically demonstrate that optically driven liquid deformation can serve as an optical memory capable of storing information and performing neuromorphic computing in a compact actuation region. A key element in the proposed photonic platform is a nanoscale gold patch located on the optical waveguide operating as an optical heater and consequently generating thermocapillary-driven thickness changes in a liquid film covering the waveguide. The image on the cover for *Advanced Photonics* Volume 4 Issue 4 provides a visual rendering of the process.