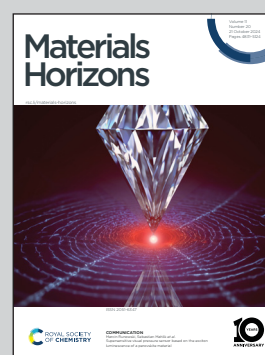


This research was conducted at the Biomimetic Mechanical Systems and Interfaces Lab, Tel Aviv University, Israel, led by Prof. Bat-El Pinchasik.

Liquid Zener diodes

Liquid diodes are microscale structures designed for unidirectional liquid flow, essential in natural processes like water collection, reproduction, and feeding. They typically guide liquids and prevent backflow. Drawing inspiration from electric Zener diodes, which regulate voltage by conducting in reverse breakdown at a specific Zener voltage, we demonstrate that flexible liquid diodes can alter their diodic behavior under compression or bending. This deformation forms a capillary bridge that permits reverse flow while maintaining flow integrity elsewhere. This innovation enables the creation of liquid flow responsive to actuation directions and introduces memory capabilities into capillary networks.

As featured in:



See Camilla Sammartino and Bat-El Pinchasik, *Mater. Horiz.*, 2024, 11, 4925.