

Yang Zhao

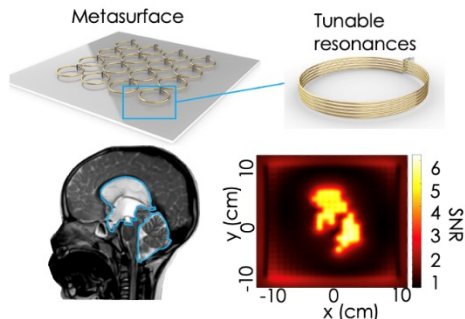
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[Affiliate Research Page](#)

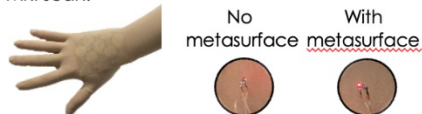
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Biomimetic metasurface sensors and actuators to manipulate electromagnetic and acoustic waves. Ultrathin sensors using wave engineering technology to image, sense, and manipulate molecules and molecular interactions. Our research is highly interdisciplinary, combining fundamental science and expertise in electrical engineering, optics, physics, and materials science with biology.



A metasurface selectively enhances the magnetic field on the partial brain region in an MRI scan.



A wearable metasurface attached to the back of the hand charges an LED on the palm side, allowing for unrestricted motion.

Keywords

Wearable sensors, actuators, nanoscopy, imaging, chirality, metasurfaces, multiphysics simulations, bio-electromagnetics, nanofabrication, and personalized nutrition

Research Interests

- Intersections of optics, photonics, and biology, with a long-term goal to improve human health
- Develop new imaging and sensing technology toward single-molecule precision for early disease detection

Current Projects

- Optical force nanoscopy studies light-molecular interactions
- Bio-inspired optical sensors for ultrasensitive pathogen detection
- Large-scale wearable metasurfaces for ultrathin, sustainable imagers and sensors

Interest Areas for Collaboration/Future Work

Dr. Zhao is interested in collaborating with biologists, chemists, and medical doctors. Her long-term goal is to improve human health through improved nutrition, environment, biomarkers, and sensors for health/wellness.