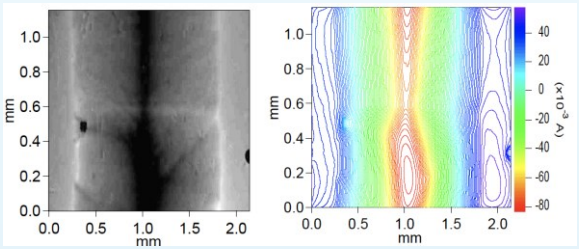
Division of Electrical, Electronic and Infocommunications Engineering
Graduate School of Engineering, Osaka University

Ubiquitous and Transdisciplinary Photonics Area（Chikumoto lab.）

From Laser Materials to Next-Gen Applications

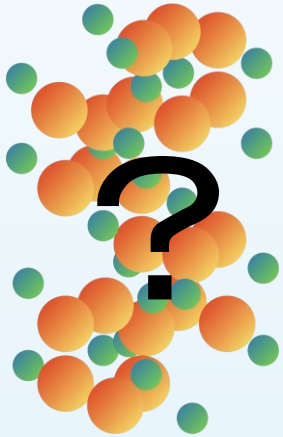
Lasers, with their high coherence and controllability, are widely used in fields such as optics, communications, medicine, and manufacturing. Today, the development of advanced laser materials and spatiotemporal beam control technologies is further expanding their applications.
Our area conducts research through two main groups: the Materials and Application Technologies (MAT) Group and the Power Laser Photonics (PLP) Group. The MAT Group focuses on developing durable, thermally conductive laser materials, applications of visible-light semiconductor lasers, and superconducting materials. The PLP Group works on precise laser beam shaping, generation of high-density optical vortices using interference, and nanofabrication techniques. Through collaboration between both groups, we aim to pioneer new developments in laser science and contribute to a wide range of societal applications.

Prof. Noriko CHIKUMOTO(MAT)
Assoc. Prof. Yoshiki NAKATA(PLP)
Assist. Prof. Yuki TAMARU

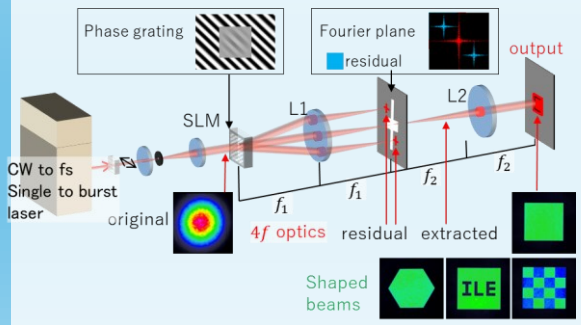


Magneto-Optical Imaging

Superconducting Applications

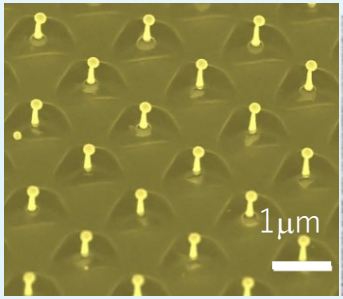


Next-Generation Laser Materials with High Durability and Thermal Conductivity

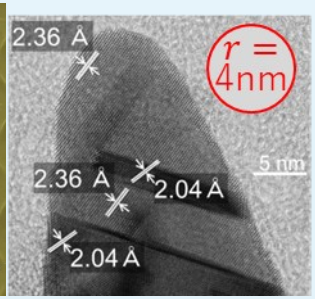


Spatiotemporal Control of Optical Structures

Laser-Based Pest Control, projection



gold nanodrop array



world's sharpest Au whisker fabricated by laser process

Nanofabrication and Applications in Nanotechnology and Plasmonics