Date: Sep. 24th, 2020

Applicant: Shang-Hua Yang

Eligibility:

- Affiliation: Institute of Electronics Engineering/EE Department, NTHU
- Research: THz active/passive devices, THz communication and THz imaging.

Proposal Category: C

Team Members: Masahito Oh-e, Ci-Ling Pan, Shang-Hua Yang

Joint Project: Soft-matter THz

Project Description: Advancing terahertz (THz) technology requires developing many THz-device components such as phase shifters and polarizers. This project is a joint effort to study potential applications of soft-mater materials such as liquid crystals (LCs) to THz-related components, through the studies of which we also investigate the structures and dynamics of soft-matter, which self-organizes into mesoscopic structures that are much larger than the microscopic scale and yet are much smaller than the macroscopic scale of target materials. Prof. Ci-Ling Pan will support the THz spectroscopic analysis and LC and other organic materials as well as device characterization, and advice on the physics of some of these materials as well. He is one of the pioneers in the field of THz LC optics and photonics. Prof. Shang-Hua Yang will be responsible for exploring high-speed dynamics of soft-matter interacting with THz wave. Prof. Masahito Oh-e will be responsible for conducting experiments and simulating on LC directors in LC cells. We expect this collaboration will last a few years. In the next 6-12 months, we will be establishing the basis of this collaboration.

In terms of this collaboration, Yang Research Group leading by Prof. Shang-Hua Yang will construct pattern-encoded quasi-CW THz systems to study THz passive components. Based on designed patterned modality and high frame switching rate, a real-time THz inspection system covering several THz frequency range will be further developed to unveil soft-matter-related mesoscopic structures and properties.

Budget Request: 50k NT

Result: to be updated