IAPLE Special Issue of *Opto-Electronic Advances*

The International Academy of Photonics and Laser Engineering (IAPLE) is a non-profit, non-governmental, non-political, non-religious, international academic institute, consisting of elected Fellows from different countries with the highest academic/engineering achievements and reputation in the fields of photonic sciences and laser engineering, as well as corporation members.

In order to promote the advancement of photonics and laser science/ engineering globally, we are pleased to publish IAPLE Special Issue of *Opto-Electronic Advances*, including two excellent articles invited from two outstanding IAPLE Fellows Professor Koji Sugioka and Professor Xiangang Luo.

Prof. Koji Sugioka's group enriched a variety of hierarchical microstructures fully decorated with high spatial frequency laser induced periodic surface structures (HSFLs) at a period of 110–200 nm, by irradiation using femtosecond laser (pulse duration: 457 fs, wavelength: 1045 nm, and repetition rate: 100 kHz) in liquids (water and acetone) at relatively high laser fluence of 1.7 J/cm^2. The orientations of HSFLs were able to be manipulated parallel and perpendicular to those of the microgrooves by changing the scanning directions. Interestingly, both clockwise and anticlockwise tilted HSFLs with a maximal deviation angle of 50° as compared to those of normal HSFLSs were found on the microstructures with height gradients, different from the tradition cognition in which the orientation of HSFLs was perpendicular to the direction of light polarization.

Optical camouflage is a magical capability of many living animals. Among many different crypsis mechanisms, polarization is a more amazing technique that was only recently revealed. Here, Prof. Xiangang Luo's group go one step further to develop an approach toward the polarimetric crypsis in the thermal infrared band, where the polarized thermal emission near the pseudo-Brewster angle is the main signal source and no existing camouflage technique has been discovered in nature. Inspired by the hydrodynamic effect of micro-structured surfaces, the electromagnetic lotus effect is proposed, which could eliminate the otherwise significant ohmic loss and thermal radiation for p-polarized light near the pseudo-Brewster angle, by virtue of a new electromagnetic boundary layer formed by an array of metallic posts. This interesting effect has been successfully exploited in broadband thermal polarimetric crypsis and polarization conversion, which would provide many new perspectives for subwavelength electromagnetics as well as biomimetics.

We greatly appreciate the IAPLE and the IAPLE Fellows' scientific guidance and valuable advice to the IAPLE Special Issue of *Opto-Electronic Advances*.