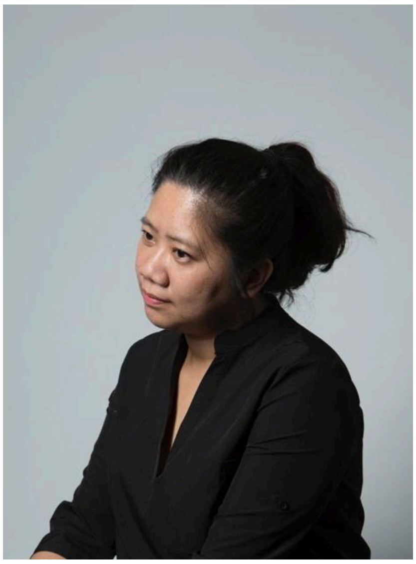

Name and affiliation:

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Presentation title:

Colorful world by soft photonic crystal: Helical liquid crystal

◆ Brief biography:

Prof. Hui-Yu Chen has worked at the Department of Physics, National Chung Hsing University since 2013. From 2006 to 2007, she worked in the Prof. Noel Clark's group, University of Colorado at Boulder, USA and focused on the Sematic A LC and other interesting LC phases. After she got her PhD degree in Applied Physics, Chung Yuan Christian University (Taiwan) in 2007, she became an assistant prof. at the Department of Photonics, Feng Chia University (Taiwan). Her lab.-Liquid Crystal Material Research Lab.-focused on the physical properties and field-induced optical response on helical LCs.

◆ Abstract (200words):

Liquid-crystal (LC) phases in one of the matter phases, such as gas, liquid and crystal phases. They are usually found in anisotropic-shape organic molecules with soft chains and hard core. Its name indicates its physical properties-like liquid, exhibiting orientational order and easy to change molecule orientation; like crystals with less positional order and possessing anisotropic physical properties of light, electricity, mechanic and etc. According to the orientational and positional orders of the LC molecules, there are many sorts of LCs. In our daily life, LC devices usually use the most simple LC phase-we call it the "nematic phase", where the birefringence is electrically controllable. In this talk, I would like to introduce LC phases with periodic helical structure, induced by adding chiral molecules into the nematic phase. By changing the chirality and temperature, we can obtain one-dimensional and three-dimensional periodic helical structures. When the periodic helical structures and the wavelength of the incident light are satisfied with Braggs' reflection condition, the helical LCs reflect various visible colors. The attractive thing is that the reflection and of them can be tunable in many ways easily. For 3-D helical LC, called blue-phase liquid crystal, the tunable reflection band comes from the lattice deformation and matainsites transformation, checked by lattice diffraction.