



Hoi-Sing Kwok, Ph.D.

Dr William Mong Chair Professor of Nanotechnology

State Key Laboratory on Advanced Displays and Optoelectronics

Hong Kong University of Science and Technology

Short Course Title

Alignment of liquid crystals

Abstract

Photoalignment is a technique of imparting order in a thin film using polarized light. The ordering can be performed using principally three approaches: (1) Photo-induced polymerization (LPP) of a monomer, (2) Photo-induced bond breaking (PBB) in a polymer film and (3) Photo-induced molecular rotation (PMR) in an azodye thin film. In this talk, I shall review the physics of all three techniques, with particular emphasis to the process of PMR. PMR has many applications ranging from displays to photonics. In display manufacturing, photoalignment is replacing conventional rubbing of polyimides. PMR can also be used to make thin film polarizers with high performance. Recently, polarizers with a dichroic ratio of over 100 have been successfully fabricated. It is much better than commercial polarizers made by stretching. Other applications include the fabrication of Pancharatnam-Berry phase optics, smart windows and optically rewritable e-papers.

Speaker Biography

Hoi-Sing Kwok obtained his PhD from Harvard University in 1978. He taught at the State University of New York at Buffalo from 1980 to 1992. In 1992 he returned to Hong Kong to become Chair Professor at Hong Kong University of Science and Technology. He is currently Director of the State Key Laboratory of Advanced Displays and Optoelectronics and Dr William Mong Chair of Nanotechnology.

He was a US White House Presidential Young Investigator in 1984. He was given the New York State Excellence Award in 1991 and the Slottow-Owaki Prize of SID in 2013. He is a Fellow of IEEE, SID and OSA. Professor Kwok has published over 700 papers and holds more than 90 patents.

He has also written/edited 3 books and edited 5 conference Proceedings.