

The 806th

MANA Seminar



Polymer Photonic Crystals Multilayered Structures

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Monday, September 29th 15:00 – 16:00

Polymers and their nanostructures represent an interesting alternative to traditional metal oxides for photonic applications as they are easy to process and enable lightweight, free-standing and flexible structures. Polymer distributed Bragg reflectors allow the development of label-free environment or food quality sensors, which are essential for reducing food waste. NIR tuned multilayered photonic aegises allow to reduce heating from sunlight emission. In the meantime, strongly scattering lossless systems made by recycled polymers allow to achieve sub-ambient radiative cooling. Both these approaches enable passive control of temperature thus providing a boost to building energy sustainability. Moreover, thermoplastic elastomers can be used to prepare mechanochromic photonic crystals, which can be used either to monitor mechanical stresses or to modulate the optical properties of materials. Finally, polymer microcavities and metamaterials allow to engineer both the fluorescence radiative rate and spectral redistribution, which joined to strong-coupling are at the cornerstone of modern photonics and quantum technologies. Special emphasis will be given to the use of recycled polymers or sulphur waste to built-up such nanostructures.

Venue: Auditorium, 1F, WPI-MANA Bldg., Namiki

Chair: Dr. Takashi Nakanishi (Group Leader)

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