



Contribution ID: 53 Contribution code: **S1 Physics Innovation**

Type: **Oral Presentation**

Fabrication of Radiative Cooling Matrix through Low-Cost Scalable Method and High Adaptability

Friday, June 24, 2022 4:00 PM (15 minutes)

Radiative cooling is a passive cooling process that requires no additional input of energy which can be used as a cooling process in various fields. Though many radiative cooling materials have been conducted to improve efficiency in temperature reduction during the past few years, the scalability and the applicability are equally important. With high efficiency and low scalability, applications of the radiative cooling film would be severely limited. In this research, doctor blade coating technique was explored as a high scalability process, and the resulting thickness of the obtained film remained within the desirable range of 11-13 μm , which correspond to the atmospheric window. The field experiment performed on the rooftop confirmed that the doctor blade-film can reduce the temperature by 3-4 $^{\circ}\text{C}$ below the ambient, comparable to the performance of the commercial radiative cooling film and the lab-based spin coating film. Moreover, by forming the patterns with the sizes between 8-13 μm on the film, additional resonance in the atmospheric window range could be induced, enhancing radiative cooling efficiency.

Primary author: WINTAKORN, Pongporn

Presenter: WINTAKORN, Pongporn

Session Classification: S1 Physics Innovation

Track Classification: Condensed Matter Physics