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ON/OFFLINE HYBRID EVENT

Tutorial 4

Sunday, October 3, 2021 / 17:00-18:00
Room C (301)

Organizer	Gil Ju Lee (Pusan Nat'l Univ., Korea)
Speaker	Young Min Song (GIST, Korea)
Topic	Introduction to passive radiative cooling and their applications
Session Title	**Materials for Thermal Management**

Description

Current cooling technologies mostly rely on vapor compression and fluid-cooled systems. However, they consume ~10% of the global energy and accelerate the depletion of fossil fuels. Moreover, CO_2 emissions from space cooling have more than tripled between 1990 and 2018 to reach 1130 million tons, and other environmental issues such as ozone depletion and air pollution are worsening. Radiative cooling, which is how the Earth cools itself, is a passive thermal management strategy. Using the spectral overlap between the peak in Planck's blackbody radiation at ~300 K and the atmospheric transmission window between 8 and 13 um, unwanted heat can be emitted to outer space without energy consumption or pollutant emission. Recently, reported passive radiative coolers have demonstrated subambient cooling during the daytime. Those coolers are attached on exterior materials, roof, or human skin to draw heat from the periphery through conduction and convection. In this tutorial, we introduce design, fabrication, and characterization of passive radiative cooling structures. Some of recent applications and remaining issues are also discussed.