

Faculty Name:

Yuan Yang

Faculty Email:

Yy2664@columbia.edu

Lab:

Yang's Lab

Project Title:

Simulation of radiative cooling walls for reducing CO2 emission

Description:

Passive daytime radiative cooling (PDRC) is an attractive electricity-free approach to reducing the energy consumption of buildings by reflecting sunlight and emitting infrared radiation (IR). Current PDRC research focuses on roofs, but limited attention has been paid to the walls.

This project targets to develop a new cooling material for walls, which has an angular asymmetry of emittance, so it can efficiently emit heat to the cold sky but not absorb heat from the hot land. This undergraduate student will be involved in finite element analysis-based simulation to design the geometry of the coating material to maximize cooling, such as thickness and surface roughness. After identifying suitable geometry, this student will help fabricate target structures and tests their performance. A postdoc in my lab will supervise this student.

Location of Research:

On-Site

of hrs/week:

30

Department/Program:

Applied Physics and Applied Mathematics

Eligibility:

BS, Second Year

To apply, please contact:

yy2664@columbia.edu