Radiative Sky Cooling from Visibly Transparent High-Emissivity Glass Window
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Research question
What is the cooling potential of a visibly transparent, high-emissivity, glass window constructed from commercially available materials?

Methodology
Construct visibly transparent, high emissivity glass window by coating soda lime glass in a dual layer consisting of indium tin oxide (ITO) and polyvinyl fluoride (PVF) film. Measure the inner air temperature within building models where upper surface of the model is constructed from glass sample.

Experimental Setup
![Experimental Setup Image](image1)

Results
![Daytime Temperature vs. Time Graph](image2)
![Nighttime Temperature vs. Time Graph](image3)

Discussion
It is expected that the glass window coated with ITO and PVF will achieve the lowest inner air temperature. This is because it can reject solar heat in the near-IR due to the highly reflective ITO, and it can dissipate infrared heat via radiative sky cooling due to the highly emissive PVF film. The superior cooling capability and high visible transparency make the window coated in ITO and PVF the best choice of those tested. The superior cooling performance of this window is supported by the inner air temperature measurements taken during the daytime. The inner air temperature in the building model with glass coated in ITO and PVF was consistently cooler than its counterparts.

Future Work
Future work aims to develop a visibly transparent window with tunable properties in order to minimize cooling effect when the ambient air is cold and maximize cooling effect when the ambient air is hot.

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