



RISE

10^{17} W
 INFRARED THERMAL RADIATION
 IS EMITTED BY THE EARTH INTO
 OUTER SPACE EACH DAY

This is nearly half of the total solar energy absorbed by the earth from the sun on a typical day. Objects on the earth's surface absorb solar energy throughout the day. When the cooler temperatures of the night prevail, the absorbed thermal energy radiates into space. Infrared thermal radiation disperses into space during the coolness of the night. Capturing this thermal heat exchange is an opportunity to capitalize on a largely untapped source of renewable energy. It also opens the possibility to supplement current solar energy technologies that are limited to collecting energy during periods of daylight.

RISE is a sculptural environment that captures emitted infrared radiation through with nanoscale IR antennas. The design consists of glass lanterns that magnify solar radiation onto a thermal heat plate. This plate is heated throughout the daylight hours. At night, when cooler temperatures prevail, a thermal heat exchange occurs, and the infrared radiation from the thermal heat plate is emitted into the sky. The microscopic antennas are able to capture the energy released in the process to generate power.

The sculpture is a visual representation of the physical principle that is occurring at a microscopic scale. The glass lanterns are suspended by a cable that is linked to a mechanical hoist on the structure. As the solar collector heats up throughout the day, the lanterns slowly recede toward the ground mimicking the sun's solar rays radiating to the Earth's surface. At night, the lanterns are lit with LED's which utilize the power being created through the collection of infrared radiation. The color of the LED varies depending on how much solar radiation is being expelled from the thermal heat plate. The lanterns glow red at the start of the release of infrared radiation and turn blue the end of the process. Throughout the night the globes will simultaneously ascend toward the sky and shift colors as the warmth of the solar collectors is emitted through the IR antenna collectors into the cool night sky.

