C2

Time: 2:15 ~ 2:30

Room : 259

Large-scale Daylighting Systems using Non-imaging Concentrators

Irfan Ullah, Seoyong Shin

(Myongji University)

This work is focused on concentrated daylighting systems aimed at large-scale building interiors to reduce electric lighting energy consumption. Two efficient approaches are presented using non-imaging concentrators. The first approach consists of a parabolic trough and the second approach contains a linear Fresnel lens. Sunlight is captured through the concentrator and distributed through the optical fibers. Since it is difficult to achieve a high concentration, a trough compound parabolic concentrator (CPC) is used to pass the maximum captured collimated sunlight into the optical fibers in both approaches. Optical-simulation results have shown that the efficiency achieved in the implemented daylighting systems—which is estimated based on the average illuminance in the interior and on the illumination quality of the system through combining daylight and light-emitting diode (LED) light—is better than that of traditional lighting systems.