

Project Id	118
Project Title	Research Opportunities on Light-Emitting Diodes (LED) Packaging
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Additional Faculty	
Faculty Department	Industrial & Manufacturing Engineering
Project Description	Light-Emitting Diode (LED) lighting has potential to fundamentally alter lighting in the future by replacing incandescent and fluorescent technologies because it offers significant energy saving, longer operational life, smaller package size, and many other advantages. The Department of Energy estimated that if twelve niche markets such as traffic signals and kitchen under-cabinet lights switched to LEDs, energy saving would be 180 TWh, which is equivalent of taking 18 million residential households off the grid and could save consumers more than \$22 billion in electricity costs. There are two major challenges in LED packaging: thermal management and cost. Thermal management is critical to LED packaging because the operational life of the LED depends on the junction temperature. The objective of this project is to involve one or two honors students in the Light-Emitting Diodes (LEDs) packaging research. The students will work with graduate students in a team in evaluating various package designs, prototyping, and testing.
Interdisciplinary Nature Description	LED packaging design for reliability and manufacturability involves issues from the fields of manufacturing engineering, materials engineering, mechanical engineering, and industrial engineering. Honors students will have the opportunity to work together with two graduate students and two undergraduate students from three different majors: industrial engineering, mechanical engineering, and general engineering. Honors students will also have the opportunity to interact with managers from industry. The students will conduct research in a team, participate in weekly discussions and present their findings during group meetings.
Links	
Number of Honors Students Requested	2
Applicable Majors	IME, ME, MATE, ENGR
desired_res	Manufacturing, material properties, thermal design
Date Added	2008-10-20 09:59:51
Active	1