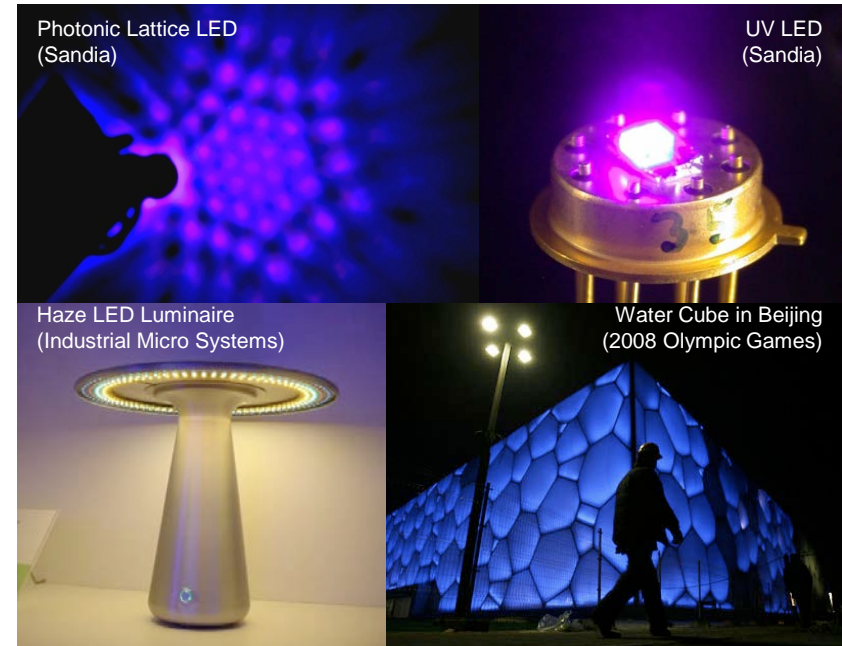


**Goal:** To explore energy conversion in tailored photonic structures and materials to enable revolutionary breakthroughs in the efficiency and performance of light-emitting diode (LED) based lighting; to improve energy-efficiency in the way we light our homes and offices, which currently accounts for 20 percent of the nation's electrical energy use.



**Research plan:** Investigate conversion of electricity to light using radically new designs, such as luminescent nanowires, quantum dots, and hybrid architectures; study energy conversion processes in structures whose sizes are even smaller than the wavelength of light; understand and eliminate defects in SSL semiconductor materials that presently limit the energy efficiency.