



Project 09: Project Progress Summary– Fall 2009 to Fall 2015

The “Nanowire Photovoltaics” project successfully developed much of the technology necessary for nanostructured solar cells. III-V nanowires (from Group III and V of the Periodic Table) were grown in a periodic array on Si substrates with a high yield (>80%) of vertical nanowires. Surface passivation was achieved by encapsulating the nanowires in a shell of AlInP, resulting in improved electrical and optical properties of the nanowires. Electrical contacting to the nanowires was developed by embedding the nanowires in a cyclotene polymer to planarize the surface for indium tin oxide contacts. The tools and capabilities to fabricate the building blocks of nanowire solar cells using metalorganic vapour phase epitaxy were successfully developed. The technology to grow InGaN/GaN nanowires by molecular beam epitaxy was successfully developed.