

## **Understanding Carrier Dynamics and Energetics in Controlled Nanowire Heterostructures**

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Nanowire heterostructures can now be fabricated with ever higher precision and quality. With this control, it is now possible to design and fabricate heterostructures to enable particular physical properties which do not occur naturally. In this talk, I will discuss a variety of optical spectroscopies with high spatial, temporal and energy resolution which allow the measurement of physical properties of single nanowires. Through comparison of these measurements with structural images using electron microscopy of similar wires, we begin to understand how the nanostructure of single wires impacts their properties. The talk ends with a discussion of preliminary measurements of single nanowires in the mid-infrared which we hope will lead to similar understanding of small-gap nanostructures which have large spin-orbit interactions.