

## **Mid-Infrared Spectra of Comet Tempel 1 Following Deep Impact**

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The formation of the Solar System is of primary interest to astronomy. To understand what comets are made of is to understand the material of the primordial outer Solar System. On July 3<sup>rd</sup>, 2005 a NASA propelled copper bullet collided with Comet Tempel 1, ejecting materials hidden since the formation of the Solar System 4.5 billion years ago. The purpose of this project is to take the mid-infrared spectra of this comet prior to and following the impact using the Low Resolution camera on the MICHELLE (Mid Infrared Echelle Spectrometer) instrument with the Gemini North 8 meter Telescope located on Mauna Kea. Data will then be compared from the before and after spectra, isolating the newly ejected materials. The mid-infrared is useful at detecting silicates grains, and constraints on grain size are of importance in the field. The pre-impact spectra is useful at detecting grains on the highly evolved nuclei surface, where the post-impact spectra will be used to study the pristine materials from the inner nuclei that will be ejected into the coma at impact. Evolved spectra are found at 'Deep Impact' and further study will reveal the exact identities of the ejected materials, which preliminarily appear as micron sized silicate grains.