

NASA/Deep Impact Mission Groundbased Campaign: Keck-II/NIRSPEC

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[1] none

Nearinfrared high-dispersion spectroscopic observations of comet 9P/Tempel at the Deep Impact were carried out by the Keck-II and NIRSPEC (at the top of Mauna Kea, Hawaii). The comet was observed during a few hours after the impact. Observations were also performed before the impact and thus the chemical compositions of cometary coma observed before and after the impact were compared with each other. Although only a few molecular species were detected before the impact, more volatiles (H₂O, HCN, C₂H₆, CH₃OH and etc.) were detected after the impact. The observation team revealed that chemical composition of volatile species inside the nucleus was different from the chemical composition observed in a coma before the impact. The chemical composition of coma observed before the impact is similar to typical composition for a Jupiter family comet like 9P/Tempel. On the other hand, volatile composition of inner materials was similar to that of the Oort Cloud comets. Temporal evolution of the observed emission spectra of cometary volatiles will be also discussed.