

Properties of PAH emission in Nova V1280 Sco

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We have carried out the near-infrared spectroscopy of dust forming nova V1280 Sco with Infrared Camera (IRC) onboard AKARI on 2009 Sep. 9, which corresponds to the epoch of ~940 days after outburst. The obtained near-infrared spectrum have shown distinct red continuum accompanied by 3.3 μ m “PAH” feature with extraordinary strong red wing in 3.4—3.6 μ m (see Figure 1). While the 3.3 μ m feature is assigned as the stretching mode of aromatic CH, the 3.4—3.6 μ m wing components are assigned as the stretching mode of aliphatic CH groups. Larger 3.4/3.3 ratio in V1280 Sco may indicate the higher aliphatic-to-aromatic ratio of the carriers than the case of general interstellar PAHs. Our results are consistent with the remark of Evans & Rawling (1994) that the observed ‘PAH’ features in nova are likely to be carried by HACs rather than free-flying PAHs. We also have carried out the follow-up mid-infrared observation of this nova with TRCS onboard Gemini South telescope on 2010 Aug. 2-3 (GS-2010B-C-7), which corresponds to the epoch of ~1260 days after the outburst. In this presentation, we will introduce the latest results of those observations and discuss the dust formation around an interesting nova V1280 Sco.

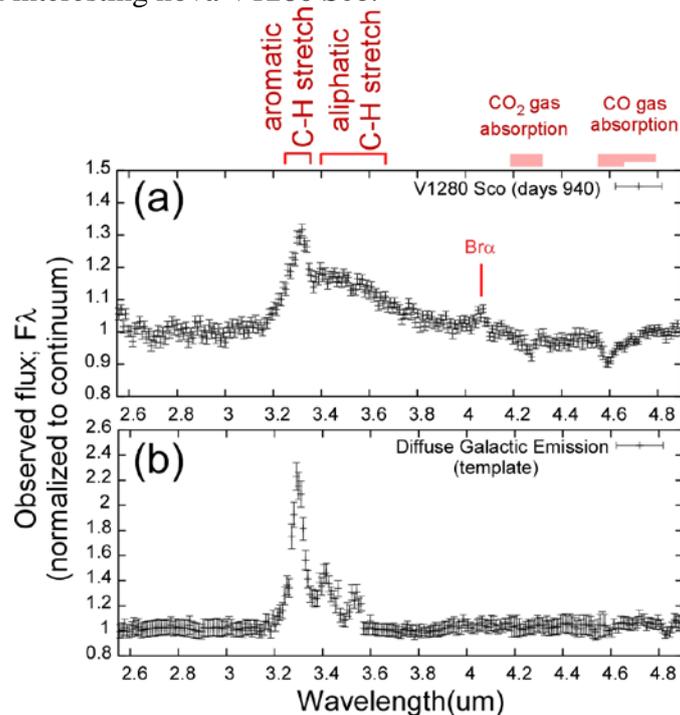


Figure 1: (a) Near-Infrared spectrum of V1280 Sco on the epoch 940 days after the discovery normalized to the continuum obtained with Infrared Camera (IRC) onboard AKARI. 3.3 μ m “PAH” feature with a strong red-wing components in 3.4-3.6 μ m was recognized in the obtained near spectrum (Sakon et al. 2010, in preparation). (b) An example of near-infrared spectrum of Galactic diffuse ISM obtained with AKARI/IRC for a comparison.

References

- [1] A. Evans, & J.M.C. Rawlings, 1994, MNRAS, 269, 427
- [2] I. Sakon, et al. 2010, in prep.