

The History of Dust Formation in V1280Sco Revealed by Multi-Epoch Near- to Mid-Infrared Observations over 5 Years

Itsuki Sakon, Shigeyuki Sako, Ryou Ohsawa, Tomohiko Nakamura, Takashi Miyata, Hidenori Takahashi, Takashi Onaka (University of Tokyo), Takashi Shimonishi (Kobe University), Takaya Nozawa (IPMU), Yuki Kimura (Tohoku University), Takashi Kozasa (Hokkaido University), Takuya Fujiyoshi (NAOJ), Makoto Uemura (Hiroshima University), Akira Arai (Nishi-Harima Astronomical Observatory)

We present the result of the multi-epoch infrared observations of dust forming nova V1280Sco with Cooled Mid-Infrared Camera and Spectrometer (COMICS) on the Subaru telescope, Thermal-Region Camera Spectrograph (T-ReCS) on the Gemini South telescope and the Infrared Camera (IRC) onboard the *AKARI* satellite, etc. Mid-infrared imaging and spectroscopic observations of V1280Sco were carried out at ~150d with Subaru/COMICS and at 1272d, 1616d and 1947d with Gemini-S/T-ReCS. Near-infrared (2—5 μ m) spectroscopic observation was carried out at 940d with AKARI Infrared Camera (IRC). Assuming an appropriate geometry of dust structures at each epoch, the dust spectral energy distribution (SED) fitting analyses are made to demonstrate the origin of both carbonaceous and silicate emission observed in the near- to mid-infrared SEDs and spectra of V1280Sco. We found that the temporal evolution of the observed SEDs were reproduced by the scenario such that the amorphous carbon dust was formed in the nova ejecta expanding into the bipolar direction and that the astronomical silicate dust was located mostly behind the outer wall of the carbonaceous dust structures. We suspect that the silicate dust might be formed as a result of the interaction between the nova ejecta and the swept-up circumstellar medium. The properties of small features on top of the dust continuum and their possible variations among different epochs are also discussed.