C/2012 S1 (ISON), C/2013 R1 (Lovejoy), and updates of the imaging polarimetric survey

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We have started the optical imaging polarimetric survey by using the "Polarimetric Imager for COmets (PICO)" [1] attached to the 0.5-m reflector at Mitaka, National Astronomical Observatory of Japan, since 2004. C/2012 S1 (ISON) and C/2013 R1 (Lovejoy) were observed as a part of our survey.

Observations of C/2012 S1 (ISON) were performed from October 26 through November 5, 2013, before its perihelion passage. The range of its phase angle during the observations is about 45 to 59 degrees. C/2013 R1 (Lovejoy) have been observed from October 11 through November 5, from December 1 to 8, 2013, and February 9 to 20, 2014. As for C/2013 R1 (Lovejoy). Thus, we obtained the data for the phase angle of 38 to 83 degrees. The feature of high polarization degree relevant to dust jet has been seen clearly in the linear polarization maps of comet Lovejoy obtained during early December, 2013.

These observational results will be reported. We will compare the polarization maps with each other and previous observations, and discuss the activities of dust grains in the cometary coma as well as the phase angle dependence of polarization of cometary dust.

References: [1] Y. Ikeda et al., PASJ, 59, 1017 (2007).