L band high-dispersion spectroscopic observation of comet Ikeya-Zhang by the Subaru telescope with IRCS

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L-band high-dispersion spectroscopic observations of comet Ikeya-Zhang were carried out by the Subaru telescope and IRCS on 2002 May 28,29. Emission lines of methane and ethane in the cometary coma were detected. Gas production rates of these molecules are Q(CH4)=2.13e26 and Q(C2H6)=1.75e26, respectively. Thus, the ethane-to-methane ratio is determined to be 0.82 for comet Ikeya-Zhang. This value is consistent with those in a few comets previously observed.

To date, only upperlimit was determined for the abundance of ethane ice in the interstellar space. The cometary values are higher than the interstellar upper limit. This fact may indicate a chemical processing in the solar nebula.

We present our observational results and discuss on the chemical processing in the solar nebula.