

On the 2004 Geminid meteor spectrum in visible - ultraviolet region: Extremely Na depletion ?

Toshihiro Kasuga[1]; Jun-ichi Watanabe[2]; Noboru Ebizuka[3]

[1] Soukendai Astronomical Science; [2] PR Center, Nat.Astron. Obs. Japan; [3] V-CAD Research Program, RIKEN

This paper shows the first result of a Geminid meteor spectrum in visible -ultraviolet region. Wavelengths between 300--600 nm were observed on the meteor appeared at 17h 41m 24s UT on 2004 December 14 UT, and the strong emissions of neutral atoms such as mainly MgI, FeI, CaI and NaI were identified. The abundances of metallic atoms, their excitation temperature were obtained under the Local Thermal Equilibrium (LTE) conditions.

The results suggest the possibility that the abundances of Geminid meteor are slightly different from the solar abundances. $\text{Na/Mg}=0.0036$, which is extremely lower than the other meteor showers. On the other hand, our firstly derived Ni/Mg of Geminid meteor is 0.078, which is larger than the solar abundance, and that of meteors of other showers. The excitation temperature value, $4640\pm 1.5\text{K}$ is consistent with their medium moving velocity.