OBSERVATIONS OF DIFFUSE INTERSTELLAR BANDS NEAR 680 nm

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There is a report on a series of diffuse interstellar bands (DIBs) with a regular spacing of about 35 cm^{-1} near 680 nm[a]. Glinski et al. proposed that the band is due to a perpendicular vibronic band of a CH_2X type molecule, where X is a heavy atom or a linear carbon chain[b] [c] . The K-sub bands appear every $2A$, where A is the rotational constant. If the $2A$ is 17-18 cm^{-1}, the 35 cm^{-1} interval is explained by transitions among the ortho states. To examine the CH_2X hypothesis, we observed this series of DIBs toward HD 21389, HD 41117 and HD 198478 with a resolution of 75000 at the Okayama Astrophysical Observatory. We detected the series of DIBs with 35 cm^{-1} intervals. However, spectra of para states are not detected clearly, although the intensity is expected to be one third of that of the ortho states. The observational result is discussed with the simulated spectra of the CH_2X type molecules.

[a] G. H. Herbig, *Astrophys. J.* **331**, 999 1988
[b] R. J. Glinski, and J. A. Nuth *Publ. Astron. Soc. Pacific* **107**, 453 1995
[c] S. A. Schulz, J. E. King, and R. J. Glinski *Mon. Not. R. Astron. Soc.* **312**, 769 2000