

**A Search for  $\text{CO}_2\text{-CO}_2$  Dimers in the Atmosphere of Venus, and  
 $\text{CO-CO}$  Dimers in the Dark Clouds of IC5146 and L134N**

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In order to search for  $\text{CO}_2\text{-CO}_2$  dimers in the atmosphere of Venus and  $\text{CO-CO}$  dimers in the dark clouds, IC5146 and L134N, we performed observations in April 1999 and February 2000 using the TRAO 14-m telescope. Dimers which are bonded by van der Waals force are believed to play an important role for maintaining the thermal equilibrium state of the atmospheres of planets, and for the depletion of molecules onto dust grains. Since  $\text{H}_2\text{-H}_2$  dimers have been detected in the atmosphere of Jupiter, Saturn, and Neptune in the infrared region, it is expected to detect radio lines of  $\text{CO}_2\text{-CO}_2$  dimers from the atmosphere of Venus. We have taken more than 100 spectra from Venus, and certain spectra contain absorption features for which more detailed analysis and additional observations are needed. On the other hand, the spectra for  $\text{CO-CO}$  dimers in the dark clouds of IC5146 and L134N, give no promising signals. Judging from the non-detection of  $\text{CO-CO}$  dimers as well as other observers' radio observations, it seems that the abundances of  $\text{CO-CO}$  dimers in the interstellar clouds may be very low.