

Abstract Submitted  
for the MAR08 Meeting of  
The American Physical Society

**Interchange-Tunneling Splitting in HCl Dimer in Helium Nanodroplets** DMITRY SKVORTSOV, RUSSELL SLITER, Univ of Southern California, MYONG YONG CHOI<sup>1</sup>, Gyeongsang National University, ANDREY F. VILESOV, Univ of Southern California — Infrared spectra of HCl dimers have been obtained in helium nanodroplets. The splitting in the vibrationally excited state of the bonded H-Cl stretching band ( $\nu_2$ ) in ( $\text{H}^{35}\text{Cl} - \text{H}^{37}\text{Cl}$ ) dimers was obtained to be  $2.7 \text{ cm}^{-1}$  as compared to  $3.7 \text{ cm}^{-1}$  in free dimer. From the splitting, the strength of the interchange-tunneling interaction in liquid helium was obtained to be  $0.85 \text{ cm}^{-1}$ , which is about a factor of two smaller than in the free dimer. The results are compared with the previous spectroscopic study of  $(\text{HF})_2$  in He droplets as well as to the theoretical study of  $(\text{HF})_2$  and  $(\text{HCl})_2$  dimers in small He clusters.

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Date submitted: 07 Nov 2007

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