

STUDY OF LARGE MOLECULAR CLUSTERS IN He DROPLETS

MIKHAIL N. SLIPCHENKO, HIROMICHI HOSHINA, ANDREY F. VILESOV, *Department of Chemistry, University of Southern California, Los Angeles, CA 90089, USA.*

The rotationally resolved spectra of the ν_3 vibrational mode of $(\text{CH}_4)_n$ ($n = 1 - 2 \times 10^3$) clusters in He droplets have been measured. With increasing of the cluster size the effective rotational constant of the CH_4 molecules in the cluster decreases and for $n > 500$ the rotational structure collapses. This behavior suggests gradual quenching of the internal rotation of the CH_4 molecules upon increase of the cluster size.