LASER INDUCED FLUORESCENCE OF PHTHALOCYANINE IN HYDROGEN DROPLETS

SUSUMU KUMA, TAKAMASA MOMOSE, *Department of Chemistry, The University of British Columbia, 2036 Main Mall, Vancouver, British Columbia V6T 1Z3, Canada..*

Droplets of hydrogen molecules were generated by the same method as that of He droplets[a]. Hydrogen droplets thus produced consist of about 10^5 molecules with a temperature of about 4 K[b]. We found that hydrogen droplets pick up phthalocyanine molecules in a pickup chamber like He droplets. Laser induced fluorescence spectra of phthalocyanine molecules captured by hydrogen droplets showed spectra similar to those observed for phthalocyanine-$(H_2)_N$ clusters embedded in He droplets with $N > 1000$, but the spectrum in hydrogen droplets showed sharper linewidth than that of phthalocyanine-$(H_2)_N$ in He droplets. In addition, a clear dependence in the linewidth on the *ortho*-to-*para* concentration ratio was observed. We will discuss details of the observed spectra.

[a] J. P. Toennies and A. F. Vilesov, Angew. Chem. Int. Ed. **43**, 2622 (2004)
[b] E. L. Knuth, F. Schünemann and J. P. Toennies, J. Chem. Phys. **102**, 6258 (1995)