THEORETICAL ANALYSIS OF ATOMIC IMPURITIES IN LIQUID HELIUM-4

SHINICHI MIURA and KEIKO SHINODA, *Department of Electronic Chemistry, Tokyo Institute of Technology, 4259 Nagatsuta, 226-8502 Yokohama, Japan (email to S.M.: miura@echem.titech.ac.jp).*

We have recently developed an integral equation theory for quantum fluids obeying Boltzmann statistics[a]. We refer to it as a generalized Ornstein-Zernike (GOZ) integral equation for quantum fluids. In the present study, the GOZ theory has been applied to atomic impurities immersed in liquid helium-4 at 4 K. Solvation structure of alkali metal and rare gas atoms in the solution was analyzed. The former is a typical example of the so-called "atomic bubble"; the latter "snowball". Detailed thermodynamic analysis will be presented.

[a] K. Shinoda, S. Miura, and S. Okazaki, J. Chem. Phys. **114**, 7497 (2001); **115**, 4161 (2001).