

Abstract Submitted
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Spectroscopic studies of the ground state dissociation energy and isotope shift of NaD¹ CHIN-CHUN TSAI, Department of Physics, National Cheng-Kung University, Tainan, Taiwan, CHIA-CHING CHU, YIN-JI LI, RONG-SIN LIN, WEI-FUNG HE, THOU-JEN WHANG, Department of Chemistry, National Cheng-Kung University, Tainan, Taiwan — We report a spectroscopic measurement of the NaD $X^1\Sigma^+$ ground state dissociation energy and its isotope shift. Stimulated emission pumping with fluorescence depletion spectroscopy is applied to measure the rovibrational levels of the near-dissociation region. A total of 230 rovibrational levels in the range of $9 \leq v'' \leq 29$ and $1 \leq J'' \leq 11$ are observed and the highest vibrational level $v'' = 29$ is about 50 cm^{-1} to the dissociation limit. Analyzing the highest 5 vibrational levels yields the dissociation energy $D_e = 15822 \pm 5 \text{ cm}^{-1}$ with $v_D = 31.2 \pm 0.1$. With our previous study, we are able to determine the difference in the well depths of this isotopologues, $D_e = D_e(\text{NaH}) - D_e(\text{NaD}) = -7 \text{ cm}^{-1}$.

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