Rovibrational levels within the top 30% of the potential well of the F$^1\Sigma_u^+$ state in all three isotopic dimers have been observed to predissociate. The predissociation rate is the smallest for the $^6\text{Li}_2$ dimer. These levels were completely absent from the Optical-Optical Double Resonance (OODR) excitation spectrum when molecular side fluorescence or ionization signal was monitored. They were observed by atomic fluorescence detection.

We report on the isotopic, vibrational and rotational dependence of the linewidth as well as pressure and power dependence studies.

The complete potential energy curve has been calculated from experimentally determined $G(v)$ and $B(v)$ functions.