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Photoassociation spectroscopy and Atom-Molecule Coherence in Ultracold Li-Yb Mixtures[1] JUN HUI SEE TOH, ALAINA GREEN, KHANG TON, SUBHADEEP GUPTA, University of Washington — The non-bialkali LiYb molecule possesses both electric and magnetic dipole moments, and the unpaired electron degree of freedom could be utilized towards magnetic trapping of ultracold molecules as well as tuning of molecular collisions and reactions. We present photoassociation (PA) spectroscopy of ground and excited state potentials of the ^{6}Li^{174}Yb molecule. We have observed several vibrational states in an excited state potential using 1-photon PA spectroscopy, detected as atom loss in an ultracold mixture of Li and Yb atoms confined in an optical dipole trap. Using 2-photon PA to couple the excited state to the ground state, we have observed several vibrational states in the ground state potential. The binding energies, linewidths, and the line strengths will be reported. We have also observed narrow atom-molecule dark state resonances in coherent two-photon spectroscopy. We intend to utilize these dark states to perform Stimulated Raman Adiabatic Passage (StiRAP) to create ultracold samples of LiYb in the electronic ground state.

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