

Abstract Submitted  
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**Infrared spectroscopy of metal-solvent clusters:  $\text{Li}(\text{NH}_3)_n$  and  $\text{Li}(\text{MeNH}_2)_n$**  ANDREW ELLIS, TOM SALTER, COREY EVANS, VICTOR MIKHAILOV, University of Leicester — Mass-selected infrared spectra of the uncharged metal-solvent clusters  $\text{Li}(\text{NH}_3)_n$  and  $\text{Li}(\text{MeNH}_2)_n$  in the N-H stretching region have been recorded using two techniques, photodepletion spectroscopy and two-colour (IR+UV) REMPI. Infrared REMPI is the most suitable for the smaller clusters, since the energy input into the cluster by the IR photon is insufficient to cause dissociation. Our latest findings for this technique will be presented alongside computational predictions of the cluster spectra. For the larger clusters, injection of an IR photon in the N-H stretching region causes rapid dissociation and offers the opportunity to record mass-selected IR spectra by photodepletion spectroscopy. IR photodepletion spectra of  $\text{Li}(\text{NH}_3)_n$  near  $3 \mu\text{m}$  recorded for  $n = 4-7$  show vibrational structure that points to completion of the first solvation shell at  $n = 4$ , with additional ammonia molecules entering a second shell in which the solvent molecules are more weakly bound to the cluster. Photodepletion spectra have also been recorded for other clusters, including  $\text{Li}(\text{MeNH}_2)_n$ , and the latest findings for these species will be described.

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