Comparison of positron and electron binding to molecules\textsuperscript{1} J.R. DANIELSON, A.C.L. JONES, M.R. NATISIN, C.M. SURKO, University of California, San Diego — Positrons can attach to molecules via Feshbach resonances in which a vibrational mode absorbs the excess energy. Using a high-resolution positron beam, this process has been used to measure positron-molecule binding energies for many chemical species.\textsuperscript{2,3} In particular, recent measurements have focused on molecules with large permanent dipole moments (i.e., $\mu > 2.5$ D), including aldehydes, ketones, and nitriles. Positron binding to these molecules is compared to the analogous weakly bound electron-molecule (negative-ion) states, commonly called “dipole-bound” states.\textsuperscript{4} Positron binding energies are found to be one to two orders of magnitude larger than those of the negative ions due to two effects: the orientation of the molecular dipole moment allows the positron to approach it more closely; and for positrons, lepton correlations (e.g., via dipole polarizability) contribute more strongly. Comparisons to available calculations will be presented, as will comparisons to binding to molecules with $\mu \sim 0$ (e.g., polarizability bound states).

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