

Abstract Submitted
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Statistical Multimode Resonant Annihilation of Positrons on Molecules¹ M.R. NATISIN, A.C.L. JONES, J.R. DANIELSON, C.M. SURKO, University of California, San Diego, G.F. GRIBAKIN, Queen's University, Belfast — Annihilation at positron energies in the range of the molecular vibrational modes is dominated by large-amplitude vibrational Feshbach resonances (VFR) in which the positron attaches to the molecule.² In small molecules, there is a quantitative description of the annihilation rates, Z_{eff} , due to the VFR.³ Here we focus on a broad spectrum of enhanced annihilation that is observed in the spectra of many, if not most, molecules.⁴ This spectral component, for example, dominates the spectra in small molecules with relatively large binding energies, such as CCl_4 and CBr_4 . A model that assumes excitation and escape from a statistically complete ensemble of multimode vibrations is presented⁵ that reproduces key features of the data. Related issues of intramolecular vibrational redistribution (IVR), and the effects of escape channels on the primary VFRs will also be discussed.

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