Abstract Submitted
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Influence of molecular geometry on positron binding to molecules.[1] J. R. DANIELSON, S. GHOSH, C. M. SURKO, University of California San Diego — The observation of vibrational Feshbach resonances (VFR) in the annihilation spectra of positrons on molecules has provided the strongest evidence to date that positrons can bind to molecules.[2] Further, the shift of these resonances relative to the underlying molecular vibrational modes provides a direct measurement of the positron-molecule binding energy, ϵ_b. Here, this technique is used to study the influence of molecular geometry on ϵ_b by making measurements on isomers and conformers (i.e., molecules with the same atomic constituents but with the atoms rearranged). Since the molecular polarizability and dipole moment are only slightly perturbed (typically $< 2\%$), the largest effect appears to be due geometrical changes. A major result is that more spherical molecules (e.g., iso-propanol) have binding energies that are typically $\sim 10 - 20\%$ larger than their chain counterparts (e.g., n-propanol). For molecules with larger molecular dipole moments, and subsequently larger binding energies, this effect is larger. Comparisons of these results to a new model by Swann and Gribakin[3] will be discussed.

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[2]Gribakin, et al., *Rev. Mod. Phys.* **82**, 2557 (2010).
[3]Swann and Gribakin, *J. Chem. Phys.* **149**, 244305 (2018).

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