

Theoretical Prediction of Electronically Excited States and
Vibrational Frequencies of Interstellar and Planetary Radicals,
Anions, and Cations

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Dissertation submitted to the Faculty of the
Virginia Polytechnic Institute and State University
in partial fulfillment of the requirements for the degree of

Doctor of Philosophy

in

Chemistry

T. Daniel Crawford, Chair

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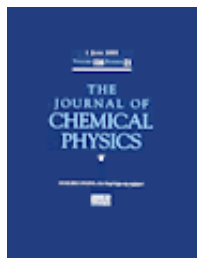
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Title: A benchmark study of the vertical electronic spectra of the linear chain radicals C2H and C4H

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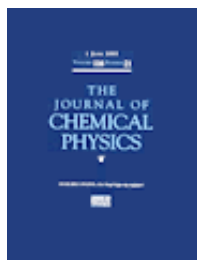
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