LABORATORY SPECTROSCOPY OF THE C_7H AND C_8H RADICALS

MICHAEL C. McCARTHY, MICHAEL J. TRAVERS, AND P. THADDEUS, *Center for Astrophysics and Division of Applied Sciences, Harvard University, Cambridge, MA 02138*; CARL A. GOTTLIEB, *Division of Applied Sciences, Harvard University, Cambridge MA, 02138.*

The linear carbon chain radicals C_7H and C_8H have been detected in their $^2\Pi$ electronic ground states in an acetylene/argon discharge. For each radical, both spin-orbit components have been detected, precise values for the rotational, fine structure, and lambda-doubling constants determined, and the entire fine structure-rotational spectrum calculated. The lowest rotational transitions of C_7H and C_8H were also observed in a pulsed discharge supersonic molecular beam source by Fourier transform microwave spectroscopy. A summary of results, including an analysis of the hyperfine structure will be presented.