ELECTRONIC SPECTRUM OF THE AlC_2 RADICAL

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An electronic transition of the AlC_2 radical (C_{2v} structure) has been observed using laser induced fluorescence spectroscopy. The molecule was prepared in a supersonic expansion using laser ablation of an aluminum rod in the presence of acetylene gas. A spectrum was recorded and assigned to the $\tilde{C}\ ^2B_2$ - $\tilde{X}\ ^2A_1$ system based on a rotational analysis and agreement with calculated molecular parameters and excitation energies. *Ab initio* results are in accord with previous theoretical studies which conclude that AlC_2 possesses a triangular $C_{2v}\ ^2A_1$ geometry, with the linear $C_{\infty v}\ ^2\Sigma^+$ AlCC isomer 0.70 eV higher in energy. A spectral fit yields molecular constants both in the ground and electronically excited states.