LASER INDUCED FLUORESCENCE SPECTROSCOPY OF BORON CARBIDE

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Laser induced fluorescence spectrum of boron carbide (BC) between 490 and 560 nm has been recorded and analyzed. Gas-phase BC molecule was produced by the reaction of B_2H_6 and CH_4 in the presence of magnesium atom from laser ablation process. The (0, 0), (1, 0), and (2, 0) bands of the $B^4\Sigma^-$ - $X^4\Sigma^-$ transition were recorded and rotationally analyzed. Spectra of both isotopes: ^{10}BC and ^{11}BC were observed. Equilibrium molecular constants for the $B^4\Sigma^-$ and the $X^4\Sigma^-$ states for both isotopes were determined. A comparison of the determined gas-phase molecular constants with those obtained using matrix isolation spectroscopy and the theoretical calculations will be presented.

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