

## LASER-INDUCED FLUORESCENCE SPECTROSCOPY OF ZIRCONIUM MONOCARBIDE

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Laser-ablated Zr metal is found to react with methane under supersonic jet-cooled conditions. New electronic bands in the 540-655 nm region have been detected by laser-induced fluorescence. Among these are bands which do not change when CD<sub>4</sub> is substituted for CH<sub>4</sub> and whose lower state B value is 0.526<sub>5</sub> cm<sup>-1</sup>; wavelength-resolved fluorescence indicates a lower state vibrational frequency of approximately 880 cm<sup>-1</sup>, suggesting that the carrier is ZrC. Analysis of the high resolution spectra is complicated by irregularities in the Zr isotope structure, indicating severe rotational perturbations. The derived bond length of  $r'' = 1.73_9$  Å is consistent with those found in other 4*d* transition metal monocarbides.