HIGH RESOLUTION STUDY OF THE C - X TRANSITION OF NbS

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The 0-0 band of the C $^4\Sigma^- \leftarrow$ X $^4\Sigma^-$ transition of NbS near 15660 cm^{-1} was recorded by laser excitation of molecules produced in a molecular beam. NbS molecules were produced by laser ablation of a niobium rod in the presence of a carbon disulfide/argon mixture in a supersonic free-jet expansion. The high nuclear spin and large nuclear magnetic moment of niobium gives rise to extensive hyperfine structure in the spectrum as is the case in NbO [a]. Optical Stark measurements were carried out on several of the lines in the spectrum with the intent of determining the permanent electric dipole moment of the molecule. Results of the rotational, hyperfine and Stark analyses will be presented and a comparison made to other early transition metal oxides and sulfides.

[a] G. Cheval, J.-L. Femenias, A. J. Merer and U. Sassenberg, J. Molec. Spectrosc., **131**, 113-126 (1988)