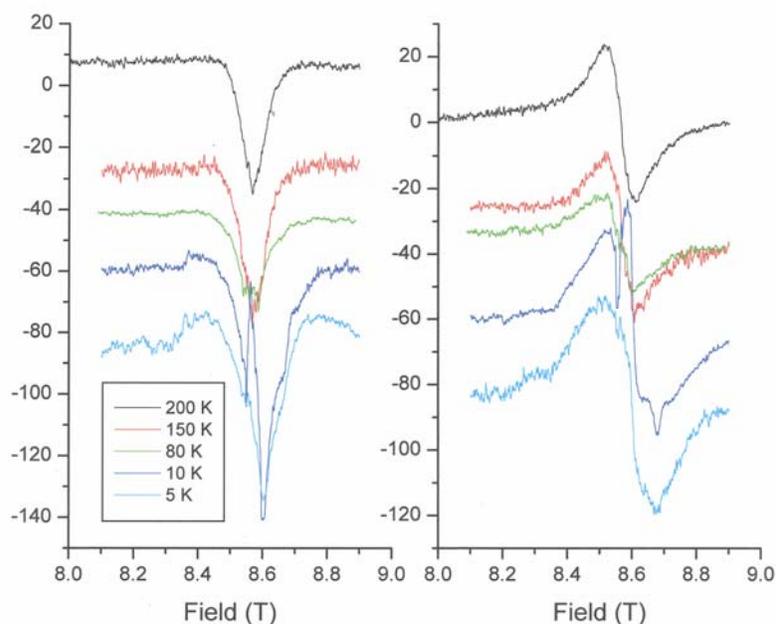


High-Frequency and High-Field Electron Paramagnetic Resonance Studies of Ferrate(VI) Species

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We have initiated the HFEPR measurements of Fe(VI) ion to gain insight into the properties of Fe-O bond, energy level patterns of the ion, and electronic transition. We have finished making measurements on the powder potassium ferrate(VI) salt. A sample of the Fe(VI) ion was prepared in the K_2SO_4 matrix in which the concentration of Fe(VI) ion was approximately 2%. Solid K_2FeO_4 in a minimum amount of saturated K_2SO_4 solution and the Fe(VI) sample was dried under reduced pressure. The results at different temperature are shown below.



Currently, we are in process to evaluate the spectra in order to determine ZFS parameters and g values. It is expected that we improve our understanding of electronic structure. Next year, we plan to make similar measurements in the K_2CrO_4 matrix to see if the parameters are influenced by the environment around Fe(VI) ion. Furthermore, we also plan to apply of high-field EPR to aqueous solution of Fe(VI). This will provide a complete picture of the electronic structure of Fe(VI) in this environment.