GROUND STATE OF FeC

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Laser induced fluorescence spectrum of FeC between 720-830 nm has been recorded and analysed. 12 electronic transitions have been studied. Transitions from the $\Omega = 3, 2$ and 1 substates of the $X^3\Delta_1$ state have been observed. The spin-orbit constant of the ground state is determined to be $-211.5 \text{ cm}^{-1}$, however, the spin-orbit separation between $X^3\Delta_2$ and $X^3\Delta_3$ substates is measured to be $-329.809 \text{ cm}^{-1}$. In addition, hot band transitions from $v = 1$ level of the $X^3\Delta_3$ state have also been observed. The vibrational separation, $\Delta G_{1/2}$, of the $X^3\Delta_3$ state was measured to be $852.12 \text{ cm}^{-1}$. 