EQUATIONS

The conversion of the manuscript from .doc to .pdf files has led to a bad resolution of the Equations, caused by a problem with our software. Therefore, we are attaching this separate file to make easier the revision process.

$$\phi = \frac{k_r}{k_{nr} + k_r} \tag{1}$$

$$\tau = \frac{1}{k_{nr} + k_r} \tag{2}$$

$$\Psi_{S_1} = {}^1\Omega \times \psi_{S_1} = {}^1\Omega \times \frac{1}{\sqrt{2}}\left[\psi_{d_{(Ir)}\pi_{(N^\wedge C)}}(1) \cdot \psi_{\pi^*_{(L^\wedge X)}}(2) + \psi_{d_{(Ir)}\pi_{(N^\wedge C)}}(2) \cdot \psi_{\pi^*_{(L^\wedge X)}}(1)\right] \tag{3}$$

$$\Psi_{T_1} = {}^3\Omega \times \psi_{T_1} = {}^3\Omega \times \frac{1}{\sqrt{2}}\left[\psi_{d_{(Ir)}\pi_{(N^\wedge C)}}(1) \cdot \psi_{\pi^*_{(L^\wedge X)}}(2) - \psi_{d_{(Ir)}\pi_{(N^\wedge C)}}(2) \cdot \psi_{\pi^*_{(L^\wedge X)}}(1)\right] \tag{4}$$

$$\Delta E_{S_1 - T_1} = 2K_{S_1 - T_1} = 2\iint \psi_{d_{(Ir)}\pi_{(N^\wedge C)}}(1)\psi_{\pi^*_{(L^\wedge X)}}(1)\frac{e^2}{r_{1,2}}\psi_{d_{(Ir)}\pi_{(N^\wedge C)}}(2)\psi_{\pi^*_{(L^\wedge X)}}(2)d_{v1}d_{v2} \tag{5}$$

$$k_r = \frac{64\pi^4 n^3}{3\hbar}\left|\vec{M}_{T1}\right|^2\langle\bar{v}^{-3}\rangle^{-1} \tag{6}$$

$$H_{SO} = \vec{B}_1\vec{s}_1 + \vec{B}_2\vec{s}_2 \tag{7a}$$

$$H_{SO} = \frac{1}{2}(\vec{B}_1 + \vec{B}_2)(\vec{s}_1 + \vec{s}_2) + \frac{1}{2}(\vec{B}_1 - \vec{B}_2)(\vec{s}_1 - \vec{s}_2) \tag{7b}$$

$$\vec{B}_i = \frac{e^2\hbar^2}{2m^2c^2}\sum\frac{Z_{eff}}{r^3} \times \vec{l}_i = \zeta \times \vec{l}_i \tag{8}$$

$$\Psi_{T_1} = \sqrt{1 - \beta_{a-b}^{\ 2}}|a\rangle + \ \beta_{a-b}|b\rangle \tag{9}$$

$$\beta_{a-b} = \frac{\langle \psi_a | H_{SO} | \psi_b \rangle}{(\Delta E_{a-b})} \tag{10}$$

$$\beta_{^3MLCT - ^1MLCT} = \frac{\left\langle ^3\psi_{MLCT} \middle| H_{SO} \middle| ^1\psi_{MLCT} \right\rangle}{\left(\Delta E_{^3MLCT - ^1MLCT}\right)} \tag{11a}$$

$$\beta_{^3MLCT - ^3LC} = \frac{\left\langle ^3\psi_{MLCT} \middle| H_{SO} \middle| ^3\psi_{LC} \right\rangle}{\left(\Delta E_{^3MLCT - ^3LC}\right)} \tag{11b}$$

$$M_{T_1} = \left\langle \psi_a | M | \psi_{S_0} \right\rangle \times \beta_{a-b} \tag{12}$$

$$M_{T_1} = \left\langle \psi_{^1MLCT} | M | \psi_{S_0} \right\rangle \times \beta_{^3MLCT - ^1MLCT} \tag{13}$$

$$\ln k_{nr} = \ln \frac{\sqrt{2\pi}}{\hbar} \frac{V_k^{\ 2}}{(1000\ cm^{-1})} - \frac{1}{2} \ln \left[\frac{\hbar\omega_M E_{em}}{(1000\ cm^{-1})^2} \right] - S_M - \frac{\gamma_0 E_{em}}{\hbar\omega_M} + \frac{(\gamma_0 + 1)^2}{\hbar\omega_M} \left(\frac{\tilde{v}_{1/2}}{16 \ln 2} \right)^2 \tag{14a}$$

$$\gamma_0 = \ln \left(\frac{E_{em}}{S_M \hbar\omega_M} \right) - 1 \tag{14b}$$

$$X = \int_{380}^{780} I(\lambda) \bar{x}(\lambda) d\lambda \tag{15a}$$

$$Y = \int_{380}^{780} I(\lambda) \bar{y}(\lambda) d\lambda \tag{15b}$$

$$Z = \int_{380}^{780} I(\lambda) \bar{z}(\lambda) d\lambda \tag{15c}$$

$$x = \frac{X}{X + Y + Z} \tag{16a}$$

(16b)

$$y = \frac{Y}{X + Y + Z}$$