Coupled Equations:

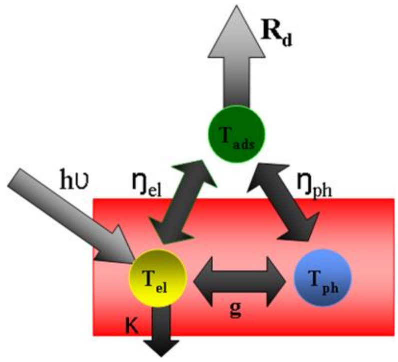
$$C_{\rm el}\frac{\partial}{\partial t}T_{\rm el}(t,z) = \frac{\partial}{\partial z}\kappa\frac{\partial}{\partial z}T_{\rm el}(t,z) - g[T_{\rm el}(t,z) - T_{\rm ph}(t,z)] + S(t,z)$$

$$C_{\rm ph}\frac{\partial}{\partial t}T_{\rm ph}(t,z) = g[T_{\rm el}(t,z) - T_{\rm ph}(t,z)]$$

$$\frac{dU_{ads}}{dt} = \eta_{el}(U_{el} - U_{ads}) + \eta_{ph}(U_{ph} - U_{ads})$$

$$U_q = \frac{h\nu_{rc}}{\exp(h\nu_{rc}/k_B T_q) - 1}$$

$$T_{ads} = \frac{h\nu_{ads}}{k_B \ln\left(\frac{h\nu_{ads}}{U_{ads}} + 1\right)}$$



$$d\theta/dt = \nu_{PW}\theta(t)\exp(-E_a/k_B T_{ads})$$

Source: $$S(z,t) = \frac{1}{2B\lambda_z}\exp\left(-\frac{z}{\lambda_z}\right)\left[F_1 \mathrm{sech}^2\left(\frac{t-t_1}{B}\right) + F_2 \mathrm{sech}^2\left(\frac{t-t_2}{B}\right)\right]$$