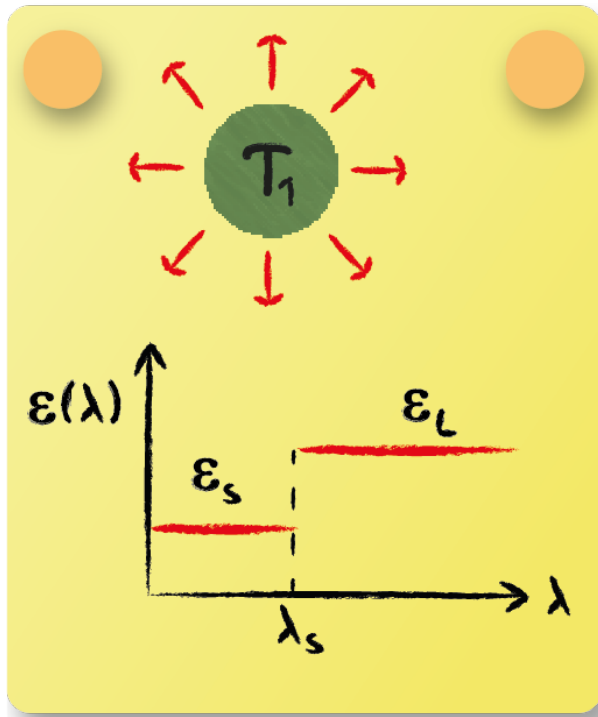# Variable Properties: Task 1

The emissivity of a body is dependend on wavelength. The diagram shows the emissivity for a certain body, which is given by ϵ_S for wavelength shorter and ϵ_L for wavelength longer than λ_S.

1

$$\bar{\epsilon} = \epsilon_S F_{0 \to \lambda_S} + \epsilon_L (1 - F_{0 \to \lambda_S})$$

2

The averaged emissivity is obtained from $\bar{\epsilon} = \frac{\int_0^\infty \dot{q}''_{\lambda \epsilon} d\lambda}{\int_0^\infty \dot{q}''_{\lambda b} d\lambda}$. Since ϵ is constant in certain intervals, the integral can be expressed by the Function $F_{0 \to \lambda}$, which gives the fraction of black body radiation up to wavelength λ.