Specification of *RL* circuit by 3 device properties:

- $\mathcal{E}$ [V] (emf)
- $R$ [Ω] (resistance)
- $L$ [H] (inductance)

Physical properties of *RL* circuit during current buildup determined by 3 combinations of the device properties:

- $\frac{\mathcal{E}}{L} = \frac{dI}{dt}\bigg|_{t=0}$: initial rate at which current increases
- $\frac{\mathcal{E}}{R} = I(t = \infty)$: final value of current
- $L/R = \tau$: time it takes to build up 63% of the current through the circuit
  
  \[ 1 - e^{-1} = 0.632 \ldots \]