Self-Induction

The induced electric EMF acts such as to oppose the change in the current that causes it (Lenz's law).

The presence of an inductance makes the electric current sluggish (resistant to change).

- Faraday's law: $\mathcal{E} = -\dfrac{d}{dt}(N\Phi_B)$

- Inductance: $L = \dfrac{N\Phi_B}{I}$

- Self-induced EMF: $\mathcal{E} = -L\dfrac{dI}{dt}$