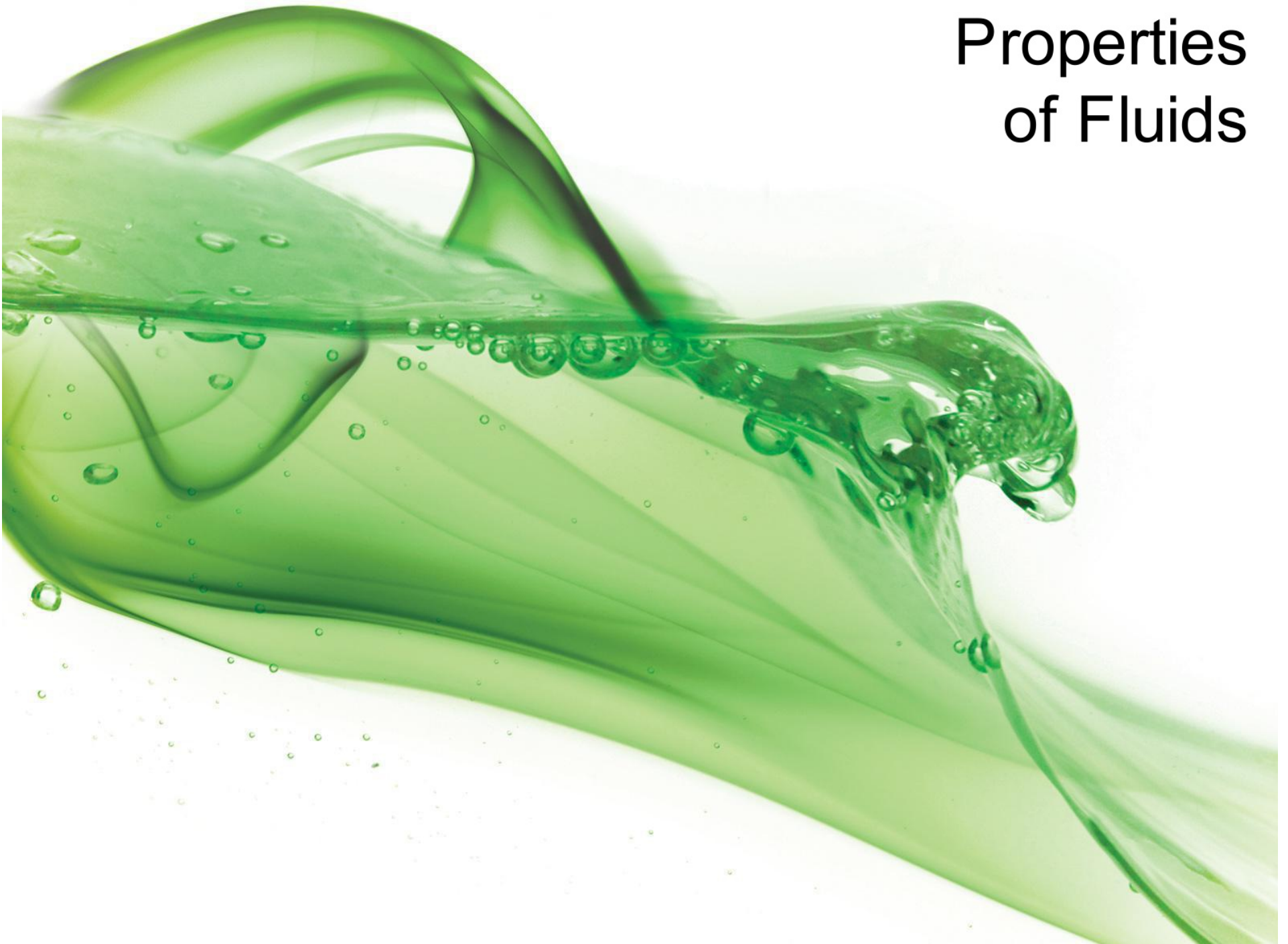
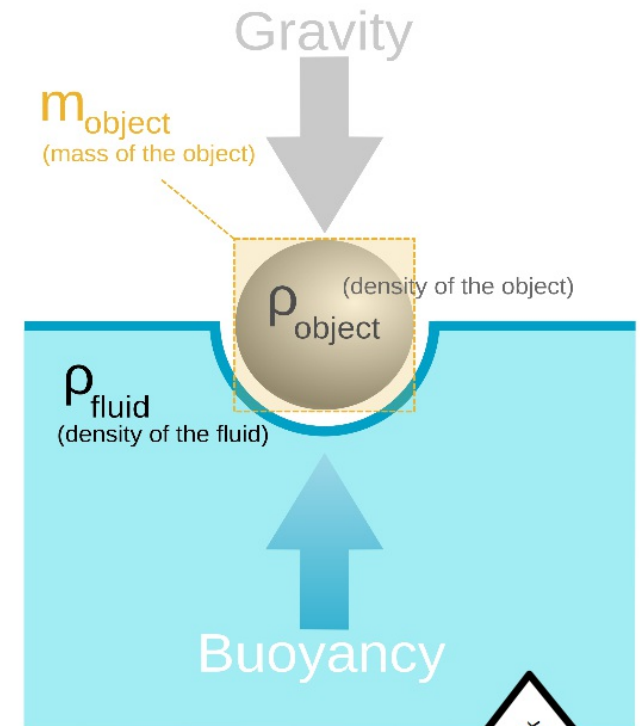


Properties of Fluids



Archimedes Principle

- Greek Mathematician from the 3rd century B.C.
- He found that the buoyant force on an object is equal to the weight of the fluid displaced by the object.
- Buoyancy: is the ability of a fluid (be it liquid or gas) to exert an upward force on a an object immersed in it.

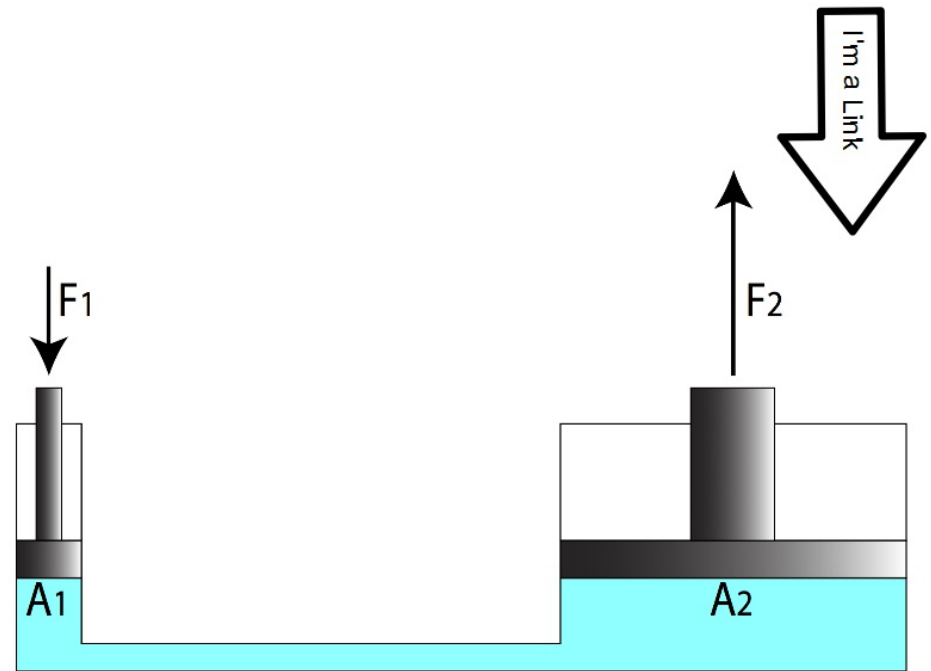


Pascal's Principle and Pressure

- Blaise Pascal (1623-1662) a French scientist
- Discovered that the force applied to a fluid is transmitted throughout that fluid
- Pressure: the force exerted per unit of area $P = \frac{F}{A}$
- basically, force in = force out
- Example: hydraulic lifts

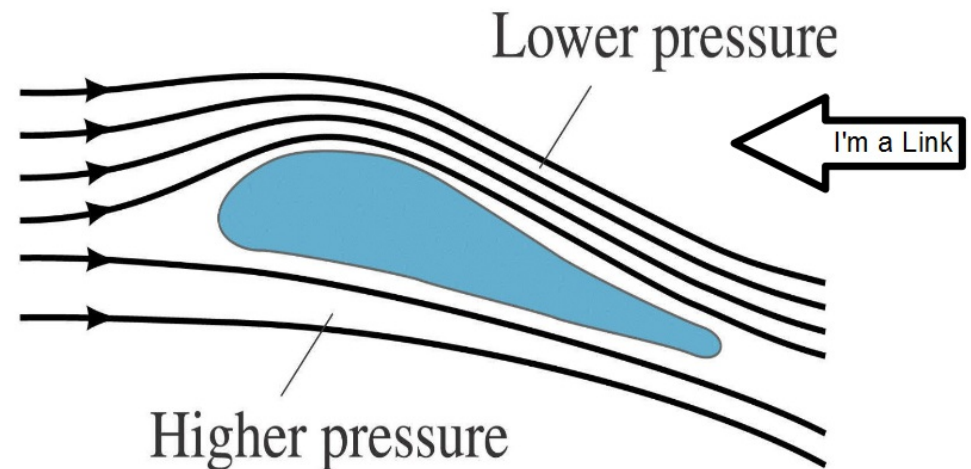
$$\frac{\text{input force}(N)}{\text{input area}(m^2)} = \frac{\text{output force}(N)}{\text{output area}(m^2)}$$

$$\frac{F_{\text{in}}}{A_{\text{in}}} = \frac{F_{\text{out}}}{A_{\text{out}}}$$



Bernoulli's Principle

- Daniel Bernoulli (1700-1782) a Swiss Scientist
- He found that the velocity of a fluid increased when the flow of the fluid is restricted
- He also found that as the velocity of a fluid increased, the pressure exerted by that fluid decreased
- Example: hose-end sprayer



Viscosity

- is the resistance of a fluid to flowing
- Example: warm syrup vs. cold syrup

