

GOCCIA N°4 DI MILLIKAN

$$\eta = 1,7 \cdot 10^{-4} \frac{\text{N} \cdot \text{s}}{\text{m}^2}$$

$$E = 10^5 \frac{\text{N}}{\text{C}}$$

$$\rho_{\text{olio}} = 1029 \frac{\text{kg}}{\text{m}^3}$$

$$V_1 = -8,97 \frac{\mu\text{m}}{\text{s}}$$

$$V_2 = 3,26 \frac{\mu\text{m}}{\text{s}}$$

FASE 1 → DISCESA

$$P = F_{\text{Atrito}}$$

$$\left| \begin{array}{l} d = \frac{m}{V} \\ m = \rho_{\text{olio}} \cdot V_{\text{gocia}} \end{array} \right.$$

$$mg = 6\pi r \eta V_1$$

$$d \cdot \frac{4}{3} \pi r^3 \cdot g = 6\pi r \eta V_1$$

$$r = \frac{\sqrt{6\pi \eta V_1}}{d \frac{4}{3} \pi g} = \frac{\sqrt{6 \cdot 1,7 \cdot 10^{-4} \frac{\text{N} \cdot \text{s}}{\text{m}^2} \cdot 8,97 \frac{\mu\text{m}}{\text{s}}}}{1029 \frac{\text{kg}}{\text{m}^3} \cdot \frac{4}{3} \cdot 9,81 \frac{\text{kg}}{\text{s}^2}} = 8,249 \cdot 10^{-7} \text{ m}$$

FASE 2 → SALITA

$$F_{\text{el}} = P + F_{\text{Atrito}}$$

$$qE = mg + 6\pi r \eta V_2$$

$$q = 3,23 \cdot 10^{-19} \text{ C}$$

$$qE = 6\pi r \eta V_1 + 6\pi r \eta V_2$$

$$q = \frac{6\pi \eta (V_1 + V_2) \cdot r}{E}$$

$$q = \frac{6\pi \cdot 1,7 \cdot 10^{-4} \frac{\text{N} \cdot \text{s}}{\text{m}^2} (8,97 + 3,26) \cdot 10^{-6} \frac{\mu\text{m}}{\text{s}} \cdot 8,249 \cdot 10^{-7} \text{ m}}{10^5 \frac{\text{N}}{\text{C}}} =$$