

# ESPERIMENTO DI MILLIKAN

GOCCE  
4

$$d_{\text{oil}} = 1029 \frac{\text{Kg}}{\text{m}^3}$$

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

$$E = 10000 \frac{\text{N}}{\text{C}}$$

$$V_1 = 8,97 \cdot 10^{-6} \frac{\text{m}}{\text{s}}$$

$$V_2 = 3,26 \cdot 10^{-6} \frac{\text{m}}{\text{s}}$$

FASE 1 : DISCESA

$$P = F_{\text{ATP}} \rightarrow mg = 6\pi\eta r v_1$$

$$d_{\text{oil}} \frac{4}{3} \pi r^2 g = 6\pi\eta r v_1$$

$$r = \sqrt{\frac{6\eta v_1}{\frac{4}{3} g d_{\text{oil}}}} = \sqrt{\frac{6 \cdot 1,7 \cdot 10^{-4} \frac{\text{Ns}}{\text{m}^2} \cdot 8,97 \cdot 10^{-6} \frac{\text{m}}{\text{s}}}{\frac{4}{3} \cdot 9,81 \frac{\text{N}}{\text{Kg}} \cdot 1029 \frac{\text{Kg}}{\text{m}^3}}} = 8,24 \cdot 10^{-7} \text{m}$$

FASE 2 : SALITA

$$F_{\text{el}} = P + F_{\text{ATP}} \rightarrow qE = 6\pi\eta r v_1 + 6\pi\eta r v_2$$

$$q = \frac{6\pi\eta r (v_1 + v_2)}{E} = \frac{6\pi \cdot 1,7 \cdot 10^{-4} \frac{\text{Ns}}{\text{m}^2} \cdot 8,24 \cdot 10^{-7} \text{m} \cdot (12,23 \cdot 10^{-6} \frac{\text{m}}{\text{s}})}{10000 \frac{\text{N}}{\text{C}}}$$

$$= 3,229 \cdot 10^{-19} \text{C}$$

$$v_1 + v_2 = 8,97 \cdot 10^{-6} \frac{\text{m}}{\text{s}} + 3,26 \cdot 10^{-6} \frac{\text{m}}{\text{s}} = 12,23 \cdot 10^{-6} \frac{\text{m}}{\text{s}}$$