

④ (16)

$$T = -6^\circ \text{C} = 267,15 \text{K}$$

$$p = 90'000 \text{Pa}$$

$$m_0 = 10^{-8} \text{g}$$

$$d_1 = 1 \text{mm} = 0,001 \text{m} = 0,1 \text{cm}$$

$$\chi = 520 \text{s}^{-1}$$

$$m = 1,9 \cdot 10^{-2} d^3 \Rightarrow \sqrt[3]{\frac{m}{1,9 \cdot 10^{-2}}} = d$$

$$u = \chi d$$

$$= k_2 \quad [k_2] = \frac{\text{kg}}{\text{cm}^3}$$

$$\frac{dm}{dt} = \int_S D \Delta p_v u dS = 4\pi C D (p_v - p_{vr})$$

Surface

$$C = \frac{2r}{\pi} = \frac{d}{\pi}$$

d in cm ~~✗~~

$$m_1 = 1,9 \cdot 10^{-2} \cdot 0,1^3 = 1,9 \cdot 10^{-5} \text{g}$$

$$D \approx 2,21 \cdot 10^{-5} - (2,21 \cdot 10^{-5} - 2,06 \cdot 10^{-5}) / 10 \cdot 6 \\ = 2,12 \cdot 10^{-5} \frac{\text{m}^2}{\text{s}^2} \quad \text{aus Tabelle Folie 26, Kapitel 9}$$

$$\Rightarrow \frac{dm}{dt} = \underbrace{4\pi D (p_v - p_{vr})}_{= k_1 \text{ konst.}} \frac{1}{\pi} d \quad | \cdot dt \\ [k_1] = \frac{\text{m}^2}{\text{s}} \cdot \frac{\text{kg}}{\text{m}^3} = \frac{\text{kg}}{\text{ms}}$$

$$\Rightarrow dm = k_1 d dt \quad | \int \quad (*)$$

$$\int_{m_0}^{m_1} dm = k_1 \int_{t_0}^{t_1} d(t) dt$$

$$\text{bei } (*) \text{ weiter } (*) | : d \Rightarrow \frac{1}{d} dm = k_1 dt \quad | \text{ mit } d = \sqrt[3]{\frac{m}{1,9 \cdot 10^{-2}}} = k_2$$

$$\frac{1}{\frac{m^{\frac{1}{3}}}{k_2^{\frac{1}{3}}}} dm = k_1 dt$$