

$$m_e := 9.1093837015 \cdot 10^{-31} \text{ kg}$$

$$n_{Cu} := 8.47 \cdot 10^{28} \text{ m}^{-3}$$

$$n_{Al} := 18.07 \cdot 10^{28} \text{ m}^{-3}$$

$$\varepsilon_{F_{Cu}} := \frac{\hbar^2}{2 \cdot m_e} \cdot (3 \cdot \pi^2 \cdot n_{Cu})^{\frac{2}{3}} = (1.127 \cdot 10^{-18}) \text{ J}$$

$$\varepsilon_{F_{Al}} := \frac{\hbar^2}{2 \cdot m_e} \cdot (3 \cdot \pi^2 \cdot n_{Al})^{\frac{2}{3}} = (1.867 \cdot 10^{-18}) \text{ J}$$

$$A_{D_{Cu}} := \frac{\pi^2 \cdot k^2}{2 \cdot e_c \cdot \varepsilon_{F_{Cu}}} = (5.211 \cdot 10^{-9}) \frac{\text{kg} \cdot \text{m}^2}{\text{s}^3 \cdot \text{A} \cdot \text{K}^2}$$

$$A_{D_{Al}} := \frac{\pi^2 \cdot k^2}{2 \cdot e_c \cdot \varepsilon_{F_{Al}}} = (3.144 \cdot 10^{-9}) \frac{\text{kg} \cdot \text{m}^2}{\text{s}^3 \cdot \text{A} \cdot \text{K}^2}$$

$$\alpha_{Cu} := 16.5 \cdot 10^{-6} \frac{1}{\text{K}}$$

$$\alpha_{Al} := 23.1 \cdot 10^{-6} \text{ K}^{-1}$$

$$z := 0.5$$

$$T_2 := 25 \text{ }^\circ\text{C} \quad T_1 := 25 \text{ }^\circ\text{C}, 26 \text{ }^\circ\text{C} \dots 1000 \text{ }^\circ\text{C}$$

$$T_M(T_1) := \frac{T_1 + T_2}{2} \quad \Delta T(T_1) := T_1 - T_2$$

$$ASC_{Cu}(T_1) := A_{D_{Cu}} \cdot T_M(T_1) \cdot (1 - 6 \cdot z \cdot \alpha_{Cu} \cdot T_M(T_1))$$

$$ASC_{Al}(T_1) := A_{D_{Al}} \cdot T_M(T_1) \cdot (1 - 6 \cdot z \cdot \alpha_{Al} \cdot T_M(T_1))$$

$$ASC_{Cu}(T_1) = \begin{bmatrix} 1.531 \cdot 10^{-6} \\ 1.533 \cdot 10^{-6} \\ 1.536 \cdot 10^{-6} \\ 1.538 \cdot 10^{-6} \\ 1.541 \cdot 10^{-6} \\ 1.543 \cdot 10^{-6} \\ 1.546 \cdot 10^{-6} \\ 1.548 \cdot 10^{-6} \\ 1.551 \cdot 10^{-6} \end{bmatrix} \frac{\text{kg} \cdot \text{m}^2}{\text{s}^3 \cdot \text{A} \cdot \text{K}} \quad ASC_{Al}(T_1) = \begin{bmatrix} 9.181 \cdot 10^{-7} \\ 9.196 \cdot 10^{-7} \\ 9.211 \cdot 10^{-7} \\ 9.226 \cdot 10^{-7} \\ 9.241 \cdot 10^{-7} \\ 9.256 \cdot 10^{-7} \\ 9.271 \cdot 10^{-7} \\ 9.286 \cdot 10^{-7} \\ 9.301 \cdot 10^{-7} \end{bmatrix} \frac{\text{kg} \cdot \text{m}^2}{\text{s}^3 \cdot \text{A} \cdot \text{K}}$$

$$\begin{bmatrix} 1.551 \cdot 10^{-6} \\ 1.553 \cdot 10^{-6} \\ 1.556 \cdot 10^{-6} \\ 1.558 \cdot 10^{-6} \\ \vdots \end{bmatrix} := 1000 \quad i := 25, 26 \dots N \quad \begin{bmatrix} 9.301 \cdot 10^{-7} \\ 9.316 \cdot 10^{-7} \\ 9.331 \cdot 10^{-7} \\ 9.346 \cdot 10^{-7} \\ \vdots \end{bmatrix}$$

$$U_{TH}(T_1) := (ASC_{Cu}(T_1) + ASC_{Al}(T_1)) \cdot \Delta T(T_1)$$

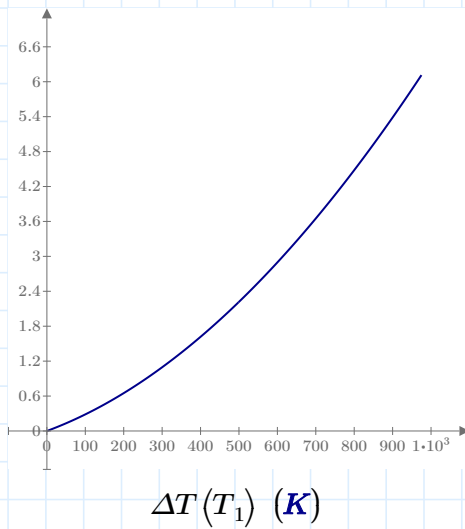
$$U_{TH}(T_1) = \begin{bmatrix} 0 \\ 0.002 \\ 0.005 \\ 0.007 \\ 0.01 \\ 0.012 \\ 0.015 \\ 0.017 \\ 0.02 \\ 0.022 \\ 0.025 \\ 0.027 \\ \vdots \end{bmatrix} \text{ mV}$$

$$X_{i,0} := i$$

$$X_{i,1} := U_{TH}(T_1)$$

$$a := \text{WRITEFILE}(\text{"Berechnung_U_TH.txt"}, X)$$

$$U_{TH}(100 \text{ }^\circ\text{C}) = 0.206 \text{ mV}$$



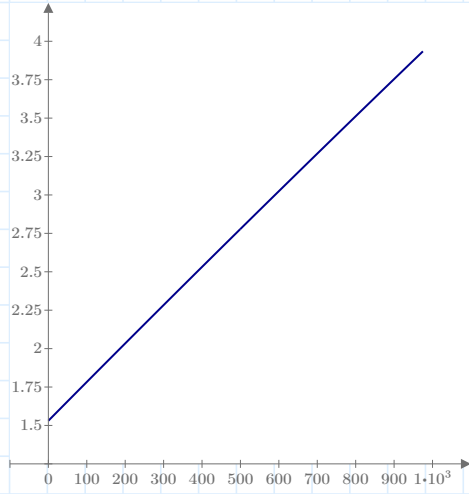
Eingaben	<i>excel</i> "Tabelle1!A1:A1000" := i	
	25	
	26	
	27	
	28	
	29	
Ausgaben	30	

$$ASC_{Cu}(T_1) \left(\frac{\mu\text{V}}{\text{K}} \right)$$

$$ASC_{Al}(T_1) \left(\frac{\mu\text{V}}{\text{K}} \right)$$

(A)

(A)



$\Delta T(T_1)$ (K)