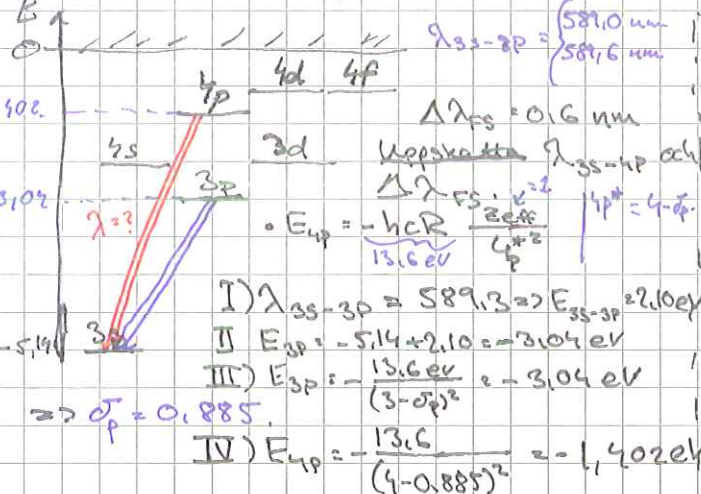


5/10-2012 {ATOM}

15) Natrium Na. (rentaupp.)
 Ionisationsenergi = 5,14 eV

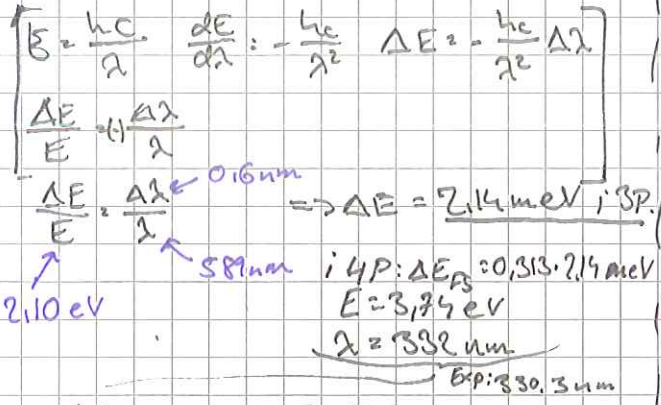


I) $\lambda_{3s-3p} = 589,3 \Rightarrow E_{3s-3p} = 2,10 \text{ eV}$
 II) $E_{3p} = -5,14 + 2,10 = -3,04 \text{ eV}$
 III) $E_{3p} = -\frac{13,6 \text{ eV}}{(3-0,885)^2} = -3,04 \text{ eV}$
 $\Rightarrow \sigma_p = 0,885$
 IV) $E_{4p} = -\frac{13,6}{(4-0,885)^2} = -1,402 \text{ eV}$

V) $\lambda_{3s-4p} \Leftrightarrow 5,14 - 1,40 = 3,74 \text{ eV}$
 $\Rightarrow \lambda_{3s-4p} = 332 \text{ nm}$

VI) $\Delta E_{s=0} = \frac{Z^2 \cdot \alpha^2 \cdot hcR}{(n^*)^3 \cdot l(l+1)}$

$\frac{\Delta E_{s=0,4p}}{\Delta E_{s=0,3p}} = \left(\frac{n_{3p}^*}{n_{4p}^*} \right)^3 = \left(\frac{3-0,885}{4-0,885} \right)^3 = 0,313$



$\Rightarrow \Delta\lambda_{3s-4p} = 0,06 \text{ nm}$
 Experimentellt: 0,061 nm



$\Rightarrow \frac{I_1}{I_2} = \frac{1}{2} = \frac{1}{2} \begin{pmatrix} 9_1 \\ 8_2 \end{pmatrix}$

a, b, c - styrkan.
 $\begin{cases} a = \frac{9}{4} \\ b+c = \frac{9}{4} \\ a+b = \frac{4}{2} \Leftrightarrow a:b:c = 9:1:5 \\ c = 1 \\ b = 1 \end{cases}$

