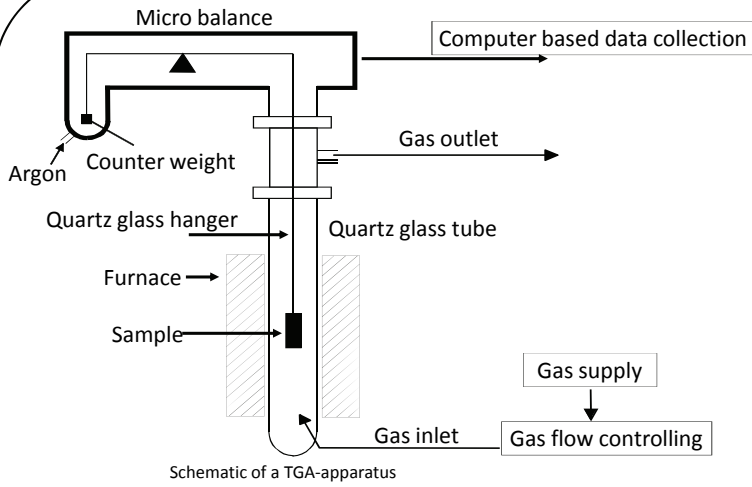


## Thermogravimetric Analysis (TGA)

### Thermogravimetric Analysis (TGA)

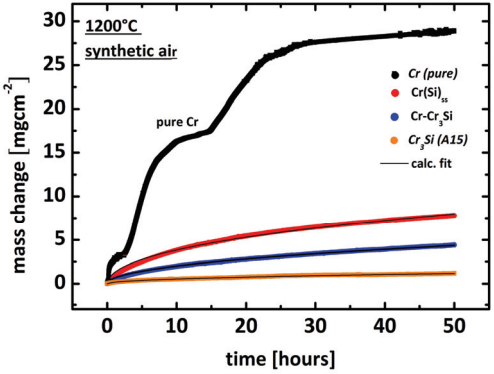


$$TGA = \Delta M \text{ [mg]}$$

$$\rightarrow \Delta M/A \text{ [mg/cm}^2\text{]}$$

$$\rightarrow \Delta M^2/A^4 \times t \text{ [mg}^2\text{/cm}^4 \times \text{s]}$$

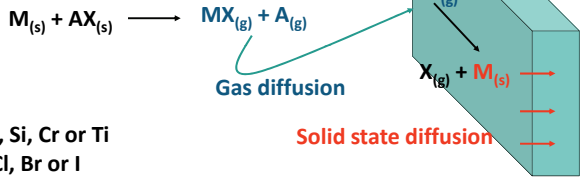
$$= k_p \text{ (parabolic rate constant)}$$



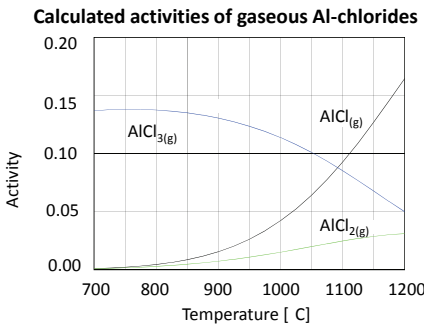
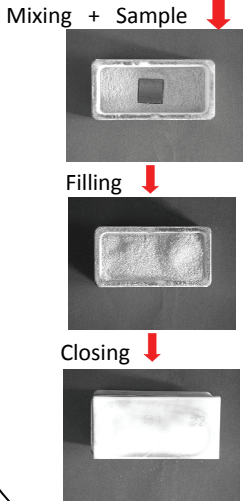
## Diffusion Coating: Powder Pack Cementation

### Diffusion Coating: Powder Pack Cementation

Temperature: 600-1200 C  
Gases: Ar, Ar/H<sub>2</sub>



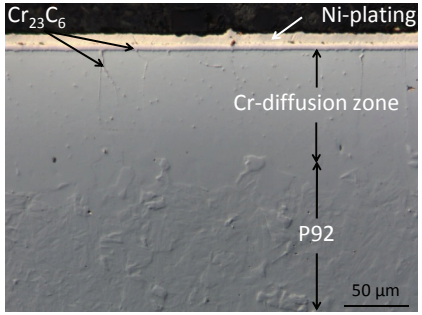
- M: Al, Si, Cr or Ti
- X: F, Cl, Br or I
- A: NH<sub>4</sub>, Na or Al



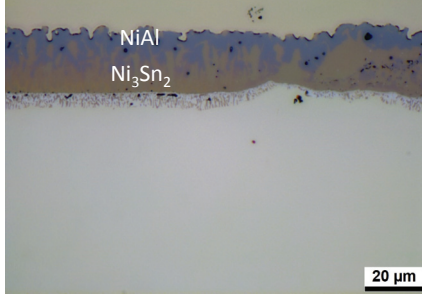
Powder mixture (weight%):  
5% Al, 0.5% NH<sub>4</sub>Cl, 94.5% Al<sub>2</sub>O<sub>3</sub>

→ Furnace  
 Setup of a powder pack experiment

Cr-diffusion on 9%-chromium ferritic-martensitic steel



Co-diffusion of Al and Sn on Alloy 600



"Out-of-Pack"-Ti-Al-diffusion layer on TNM-B1

