



04

METALURGIA FÍSICA
TECNOLOGIA DA CONFORMAÇÃO PLÁSTICA

Tecnologia em Materiais
Prof. Luis Fernando Maffeis Martins

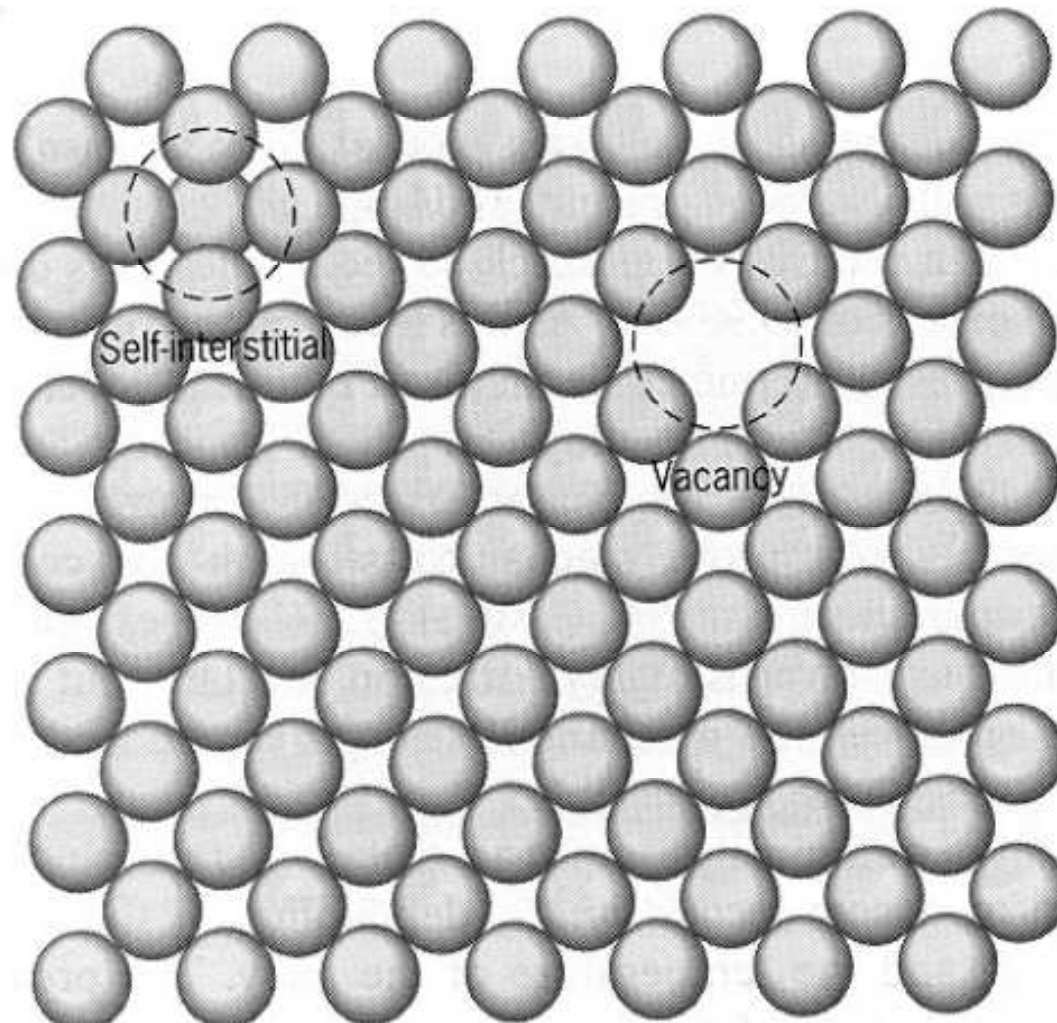
Estrutura dos sólidos cristalinos

As estrutura dos sólidos cristalinos não são perfeitos pois apresentam defeitos cristalinos. O estudo e o entendimento dos defeitos é essencial para a compreensão das propriedades dos materiais.

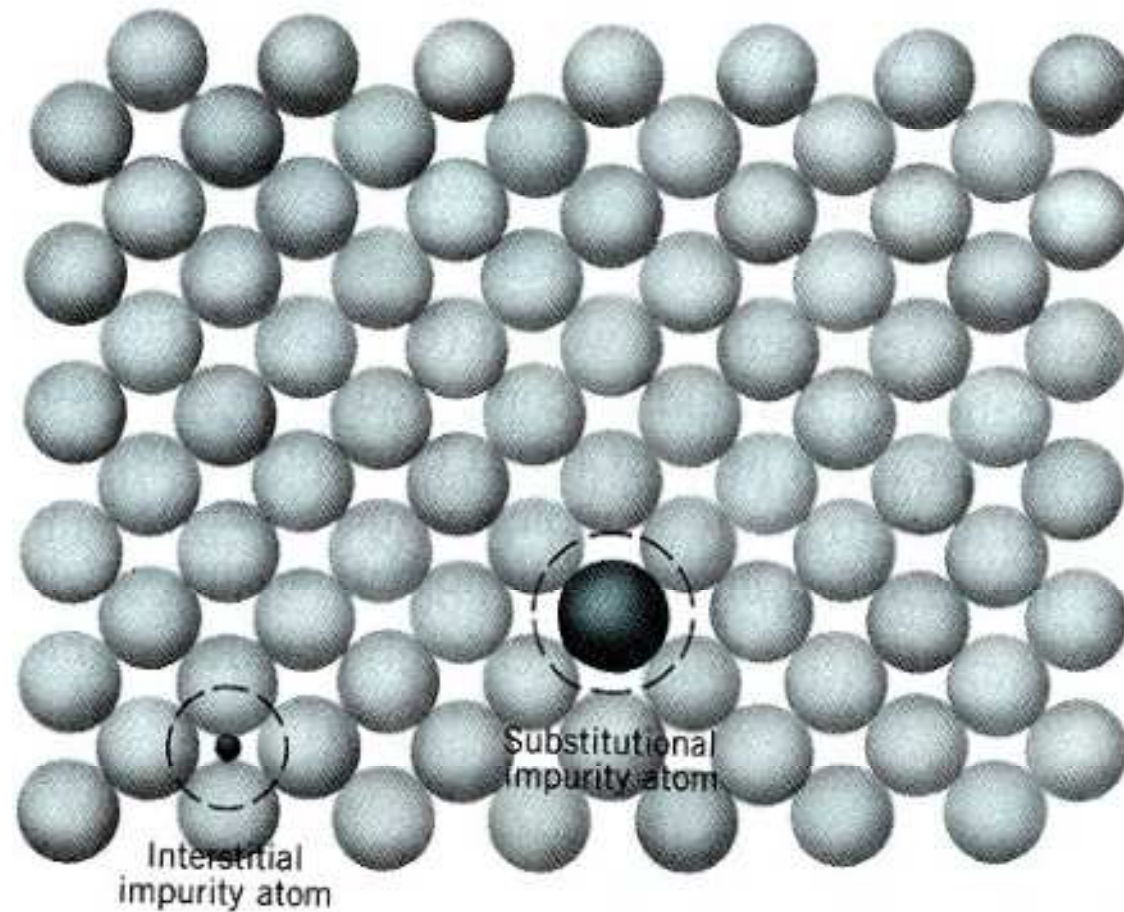
Os defeitos cristalinos podem ser classificados em função de sua geometria, dividindo-se em:

- defeitos puntiformes
- defeitos de linha (unidimensionais)
- defeitos de superfície (bidimensionais)
- defeitos de volume (tridimensionais)

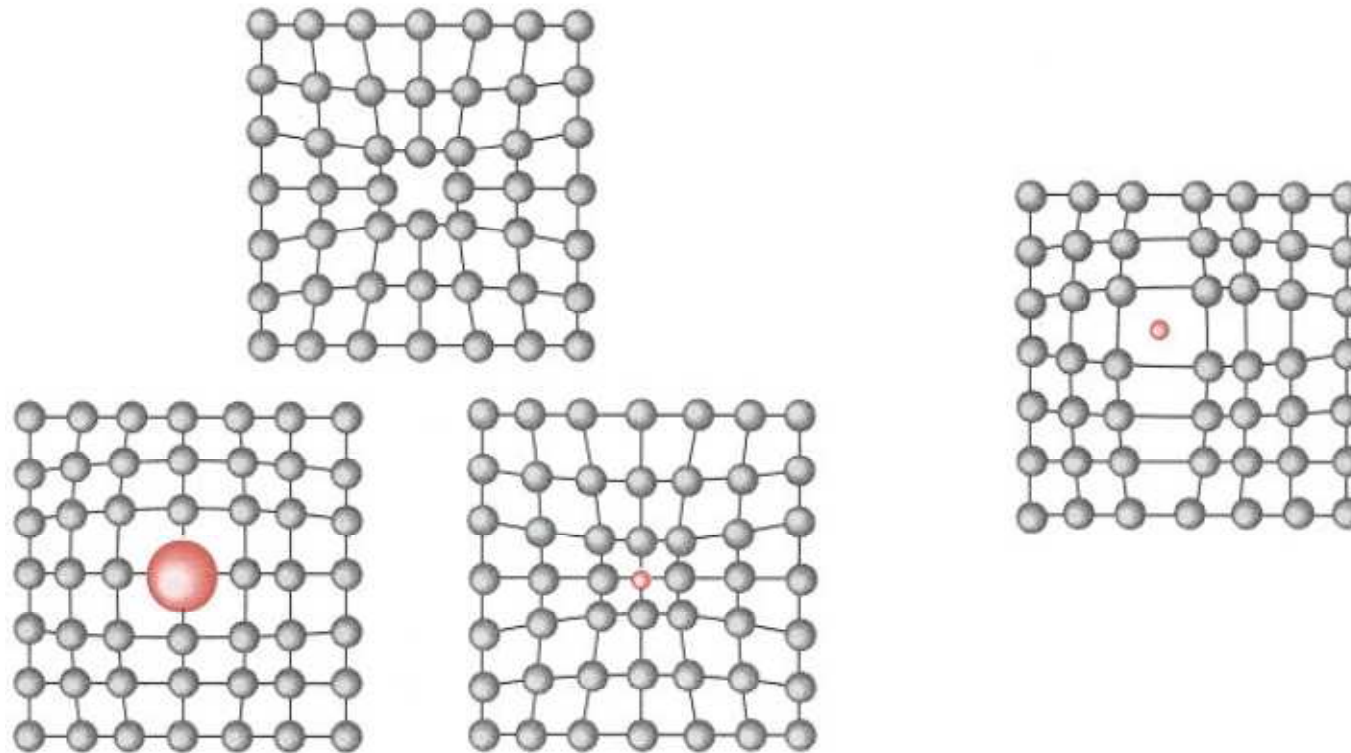
Defeitos puntiformes



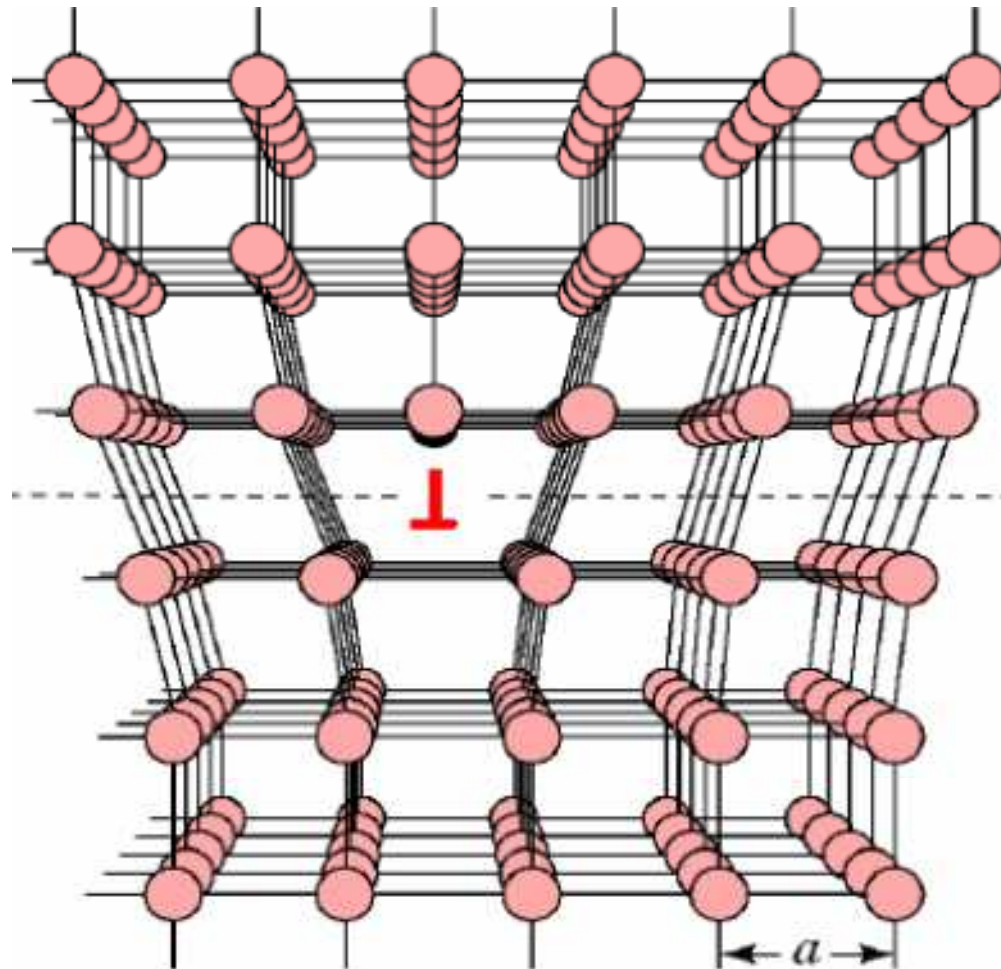
Defeitos puntiformes



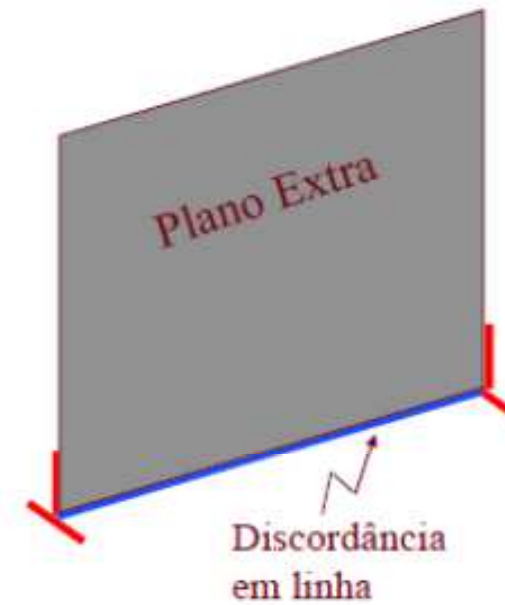
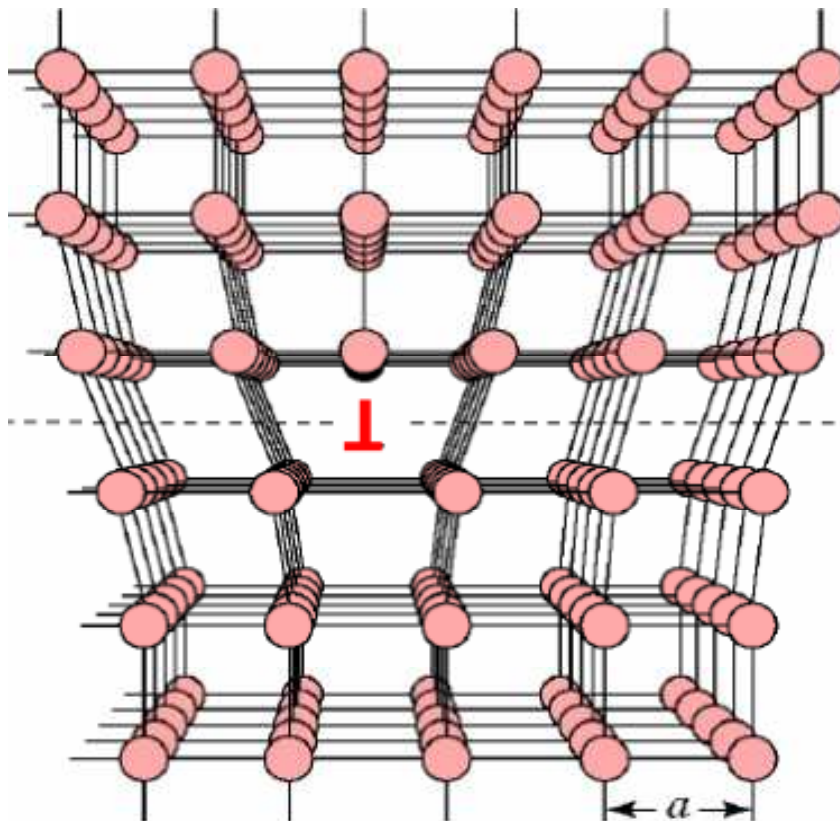
Defeitos puntiformes



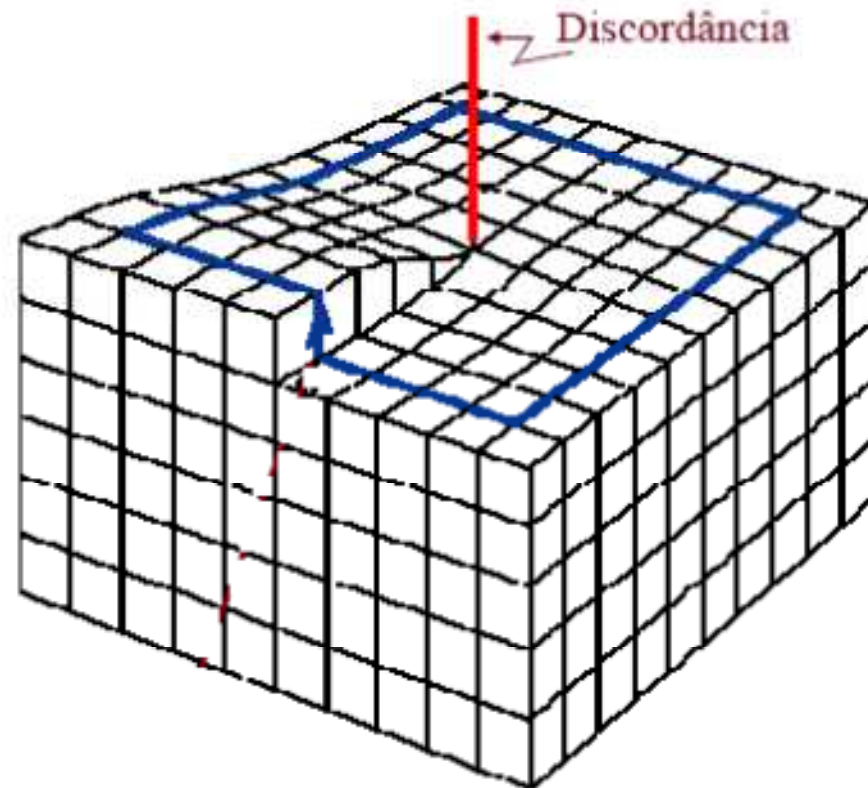
Defeitos de linha



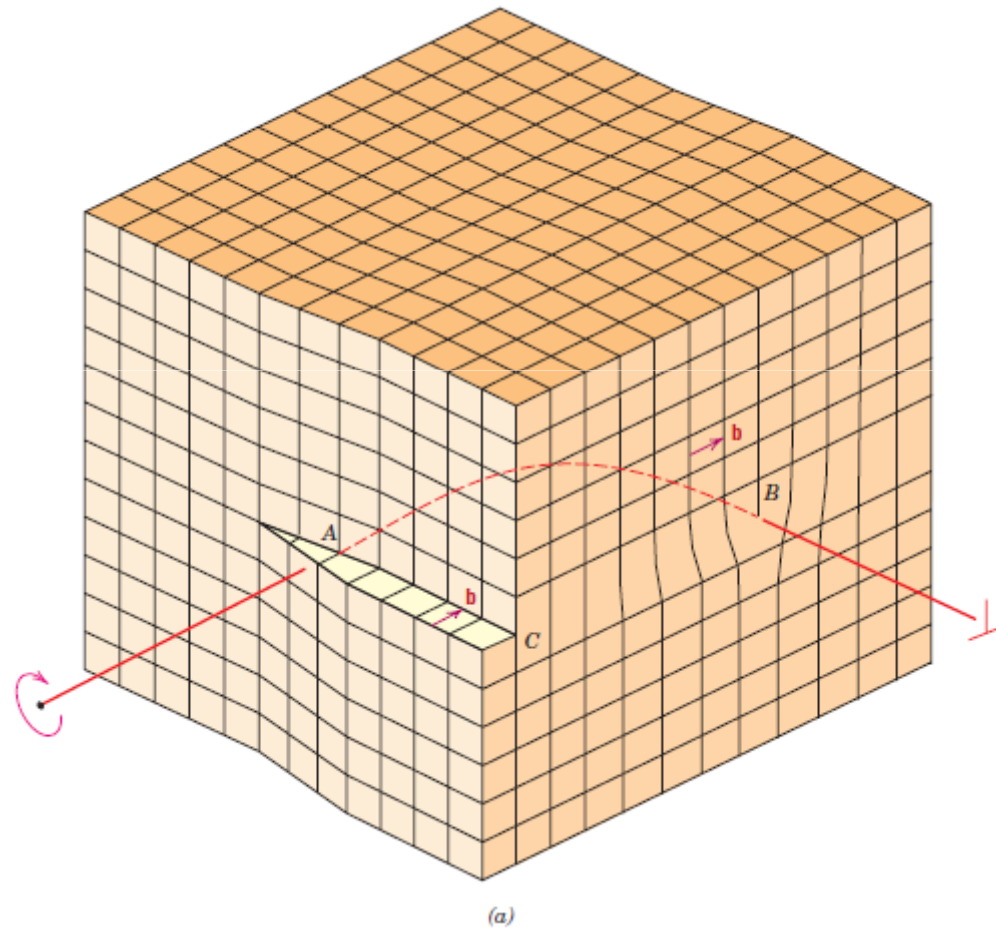
Defeitos de linha



Defeitos de linha



Defeitos de linha



Defeitos de linha

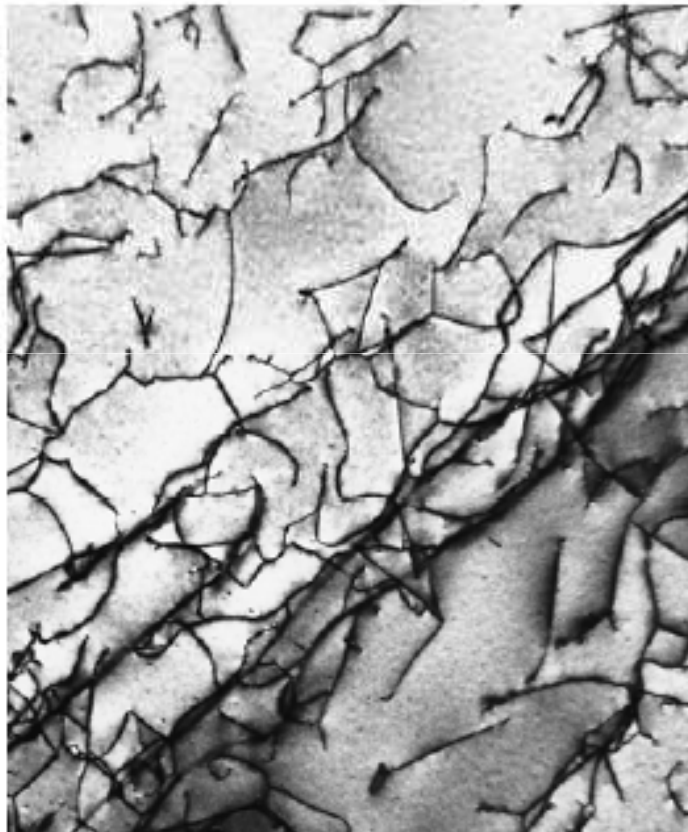
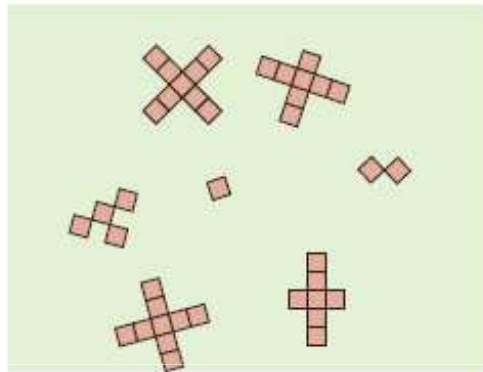
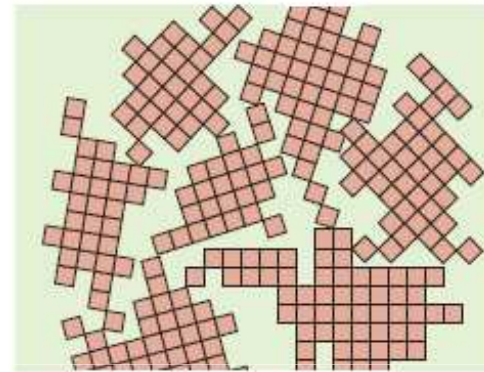


Figure 4.6 A transmission electron micrograph of a titanium alloy in which the dark lines are dislocations. 51,450 \times . (Courtesy of M. R. Plichta, Michigan Technological University.)

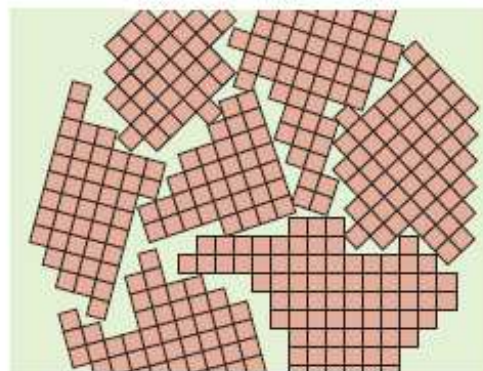
Defeitos de superfície



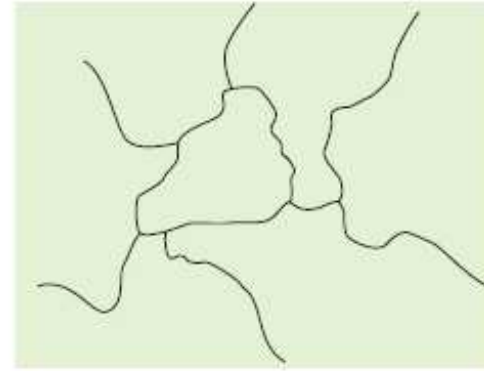
(a)



(b)



(c)

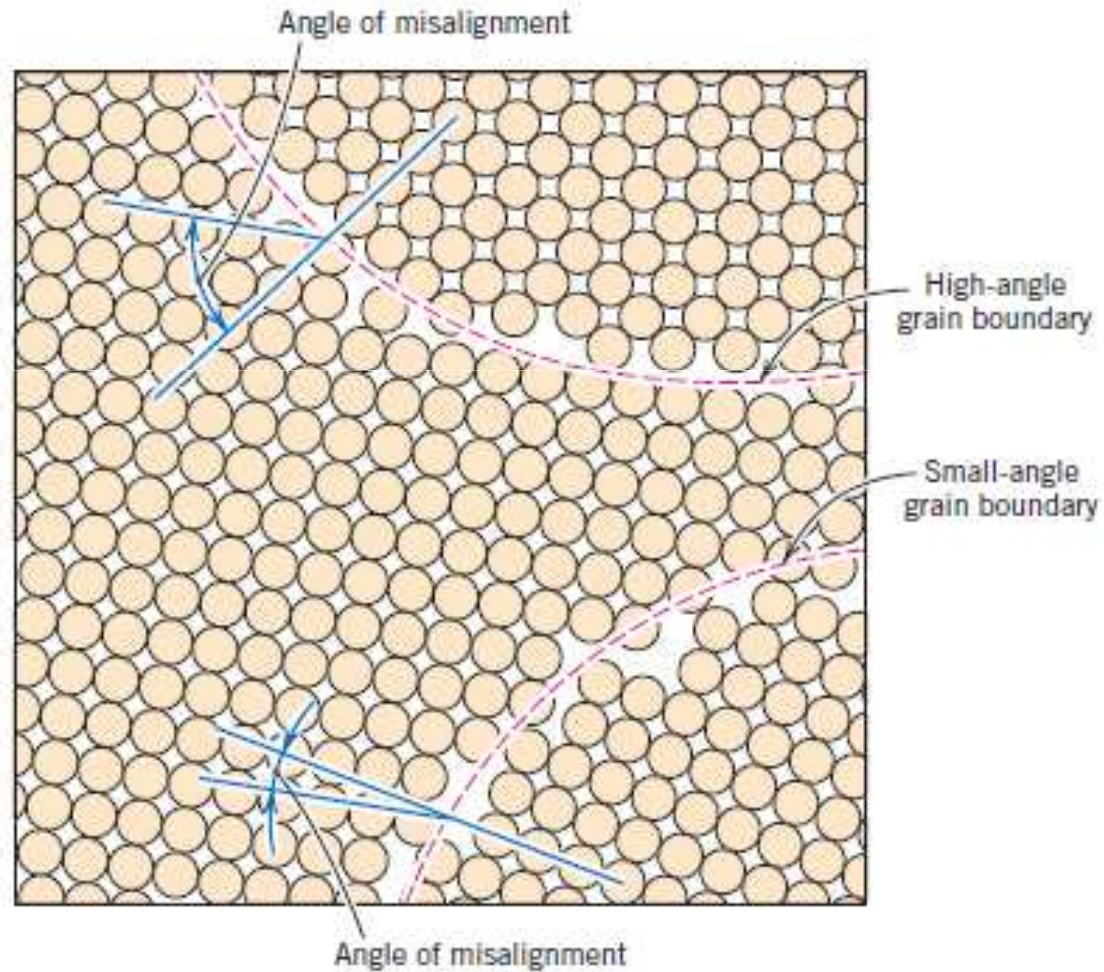


(d)

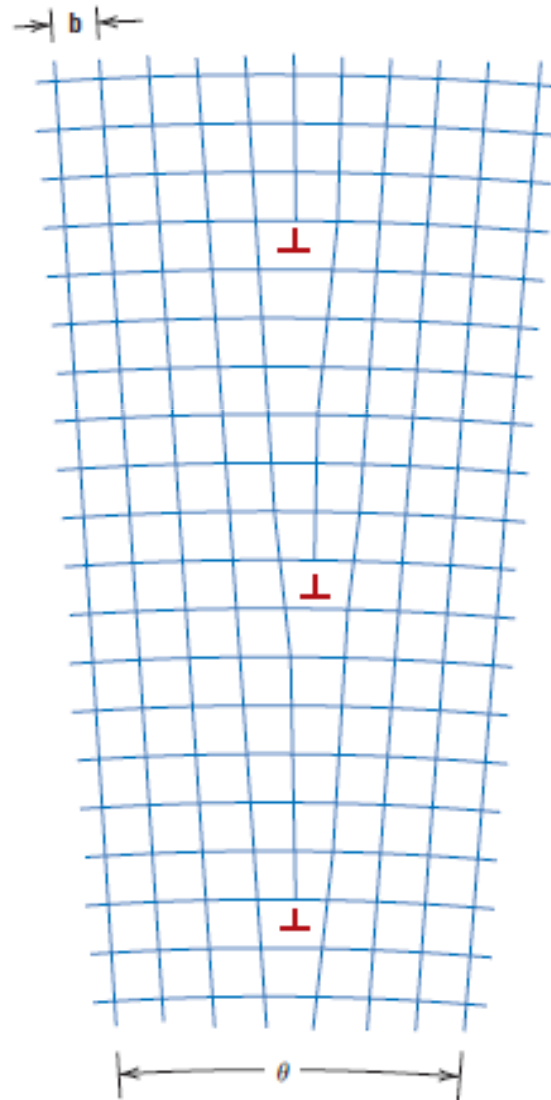
Defeitos de superfície



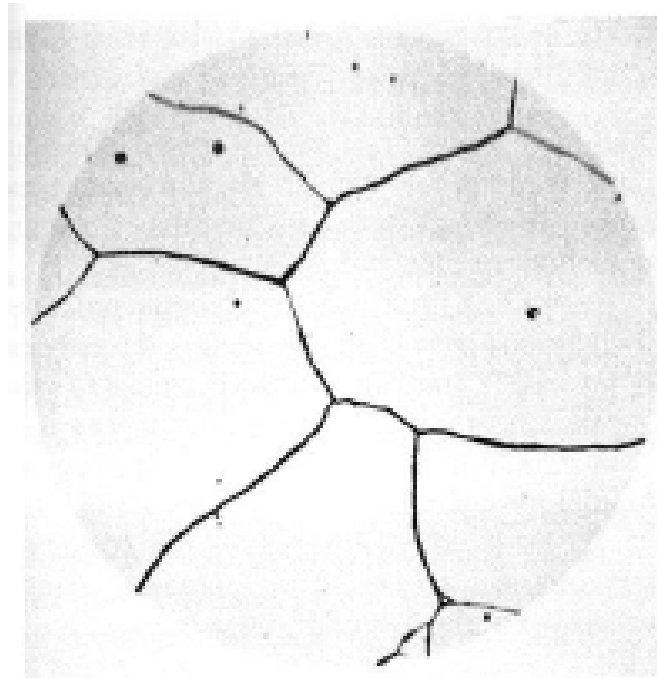
Defeitos de superfície



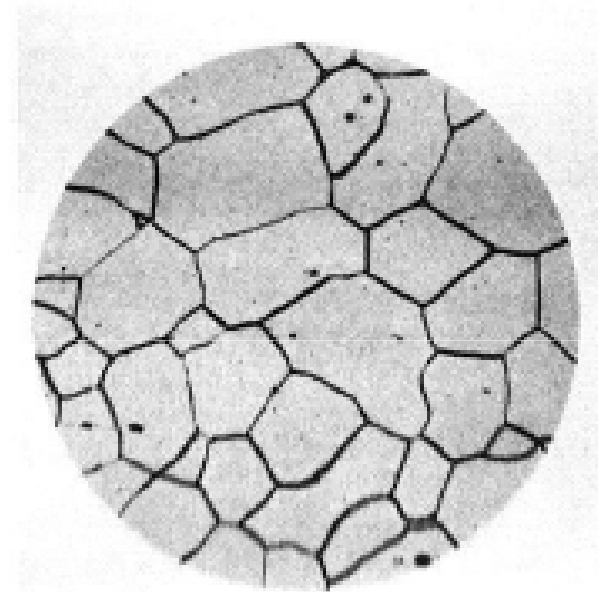
Defeitos de superfície



Defeitos de superfície

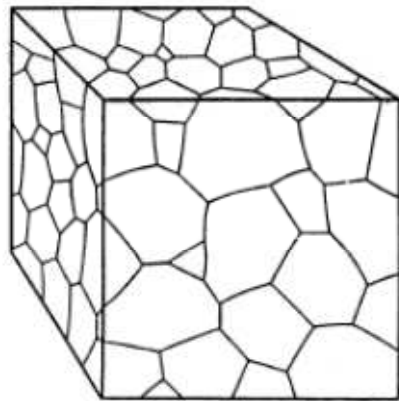


(a) Grain Size, $G = 1$

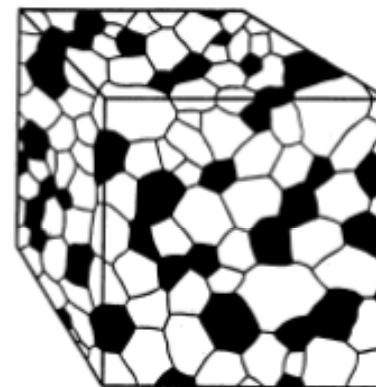


(b) Grain Size, $G = 4$

Defeitos de superfície



contorno de grão



interface

Contornos de grão

