03

# CIÊNCIA E ENGENHARIA DOS MATERIAIS

Engenharia de Produção / Engenharia Mecânica
Prof. Luis Fernando Maffeis Martins

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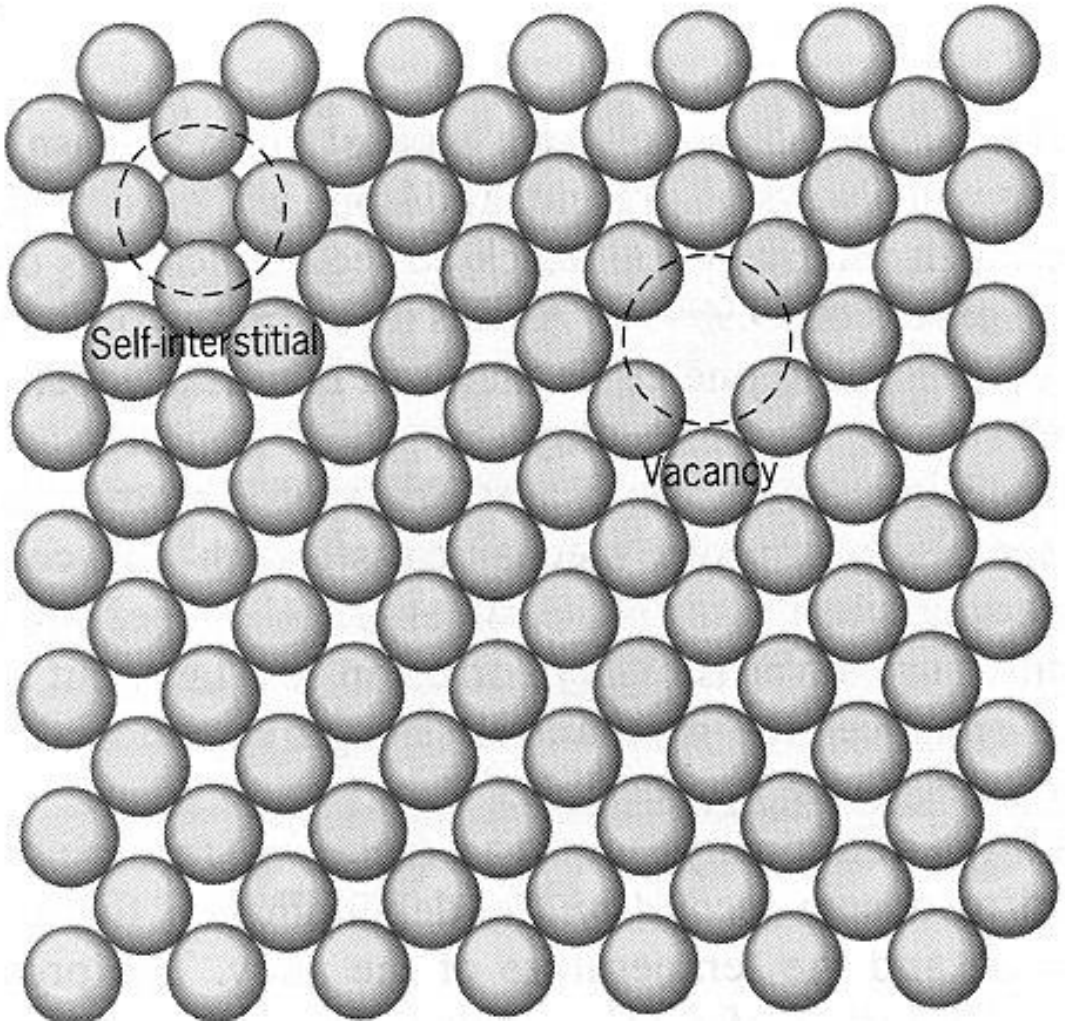
# Estrutura dos sólidos cristalinos

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.

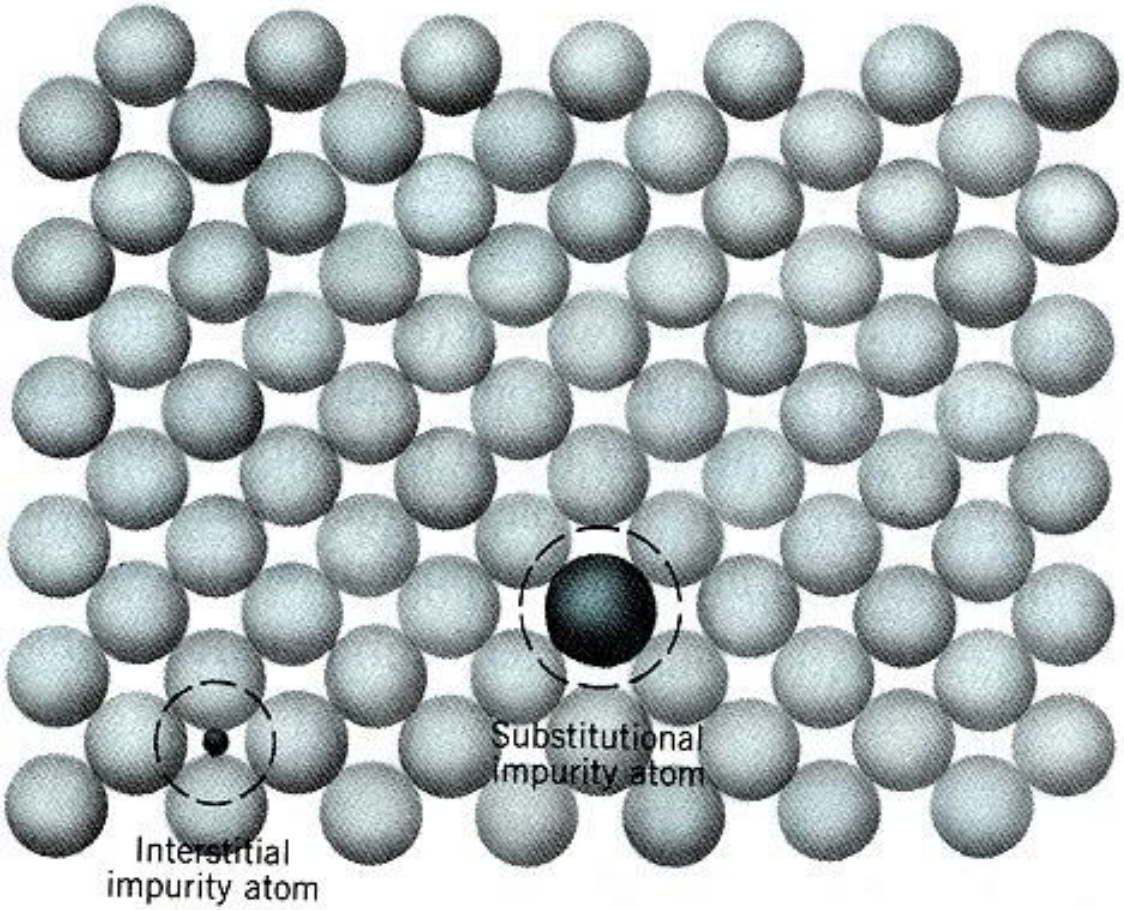
Os defeitos cristalinos podem ser classificados em função de sua geometria, dividindo-se em:

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

# Defeitos puntiformes



# Defeitos puntiformes



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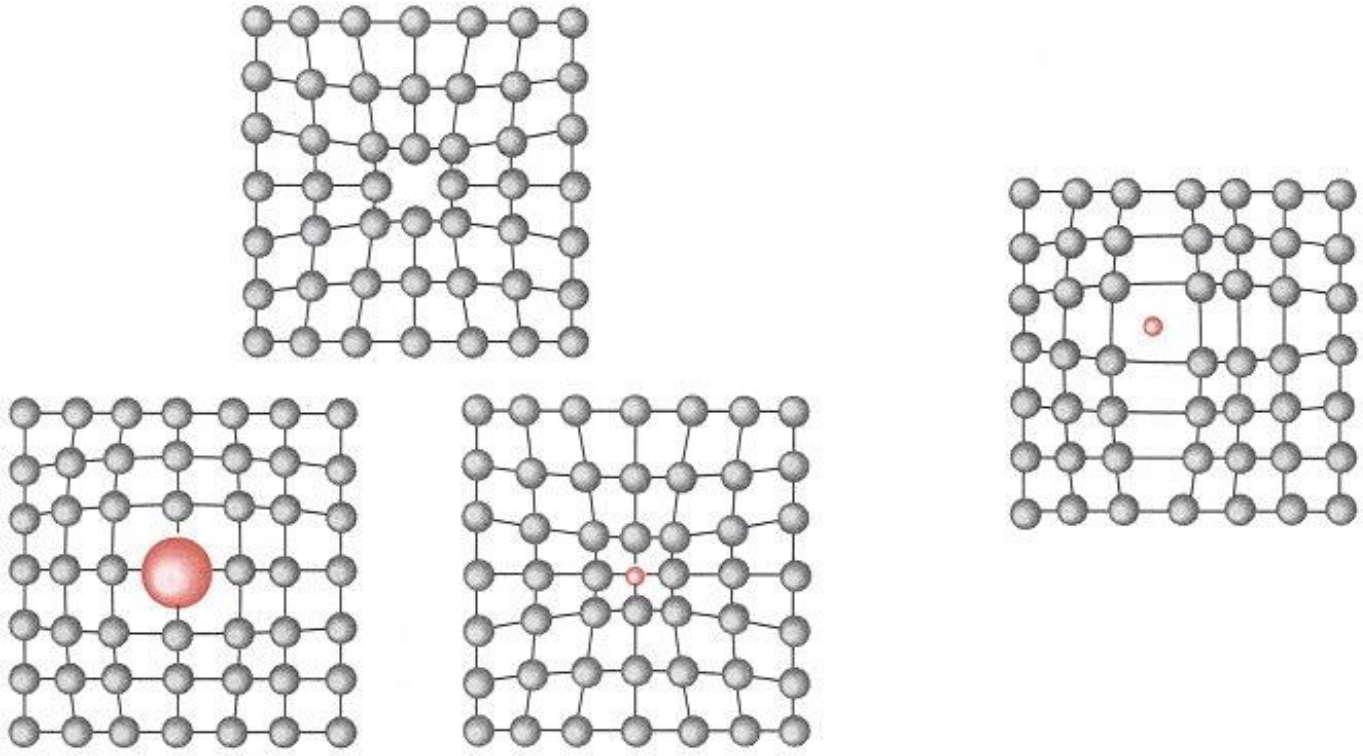
# Defeitos puntiformes



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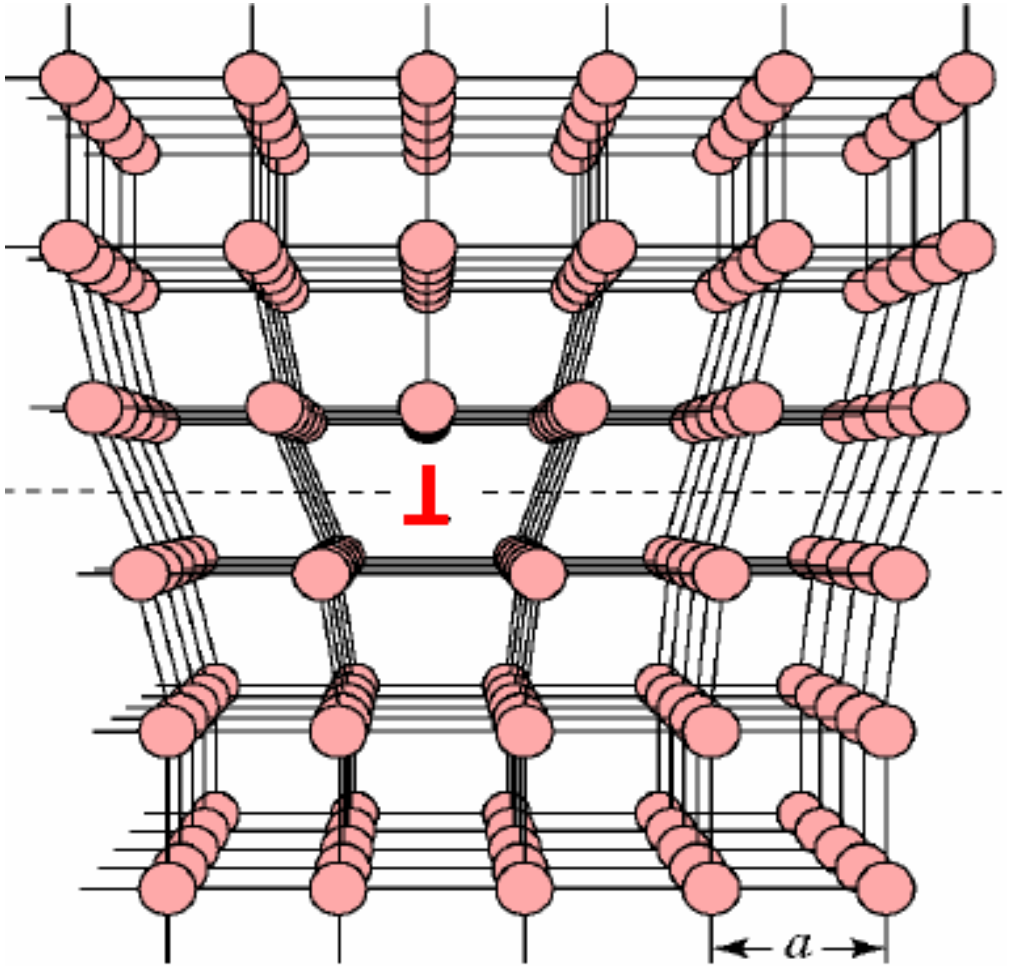
# Defeitos de linha



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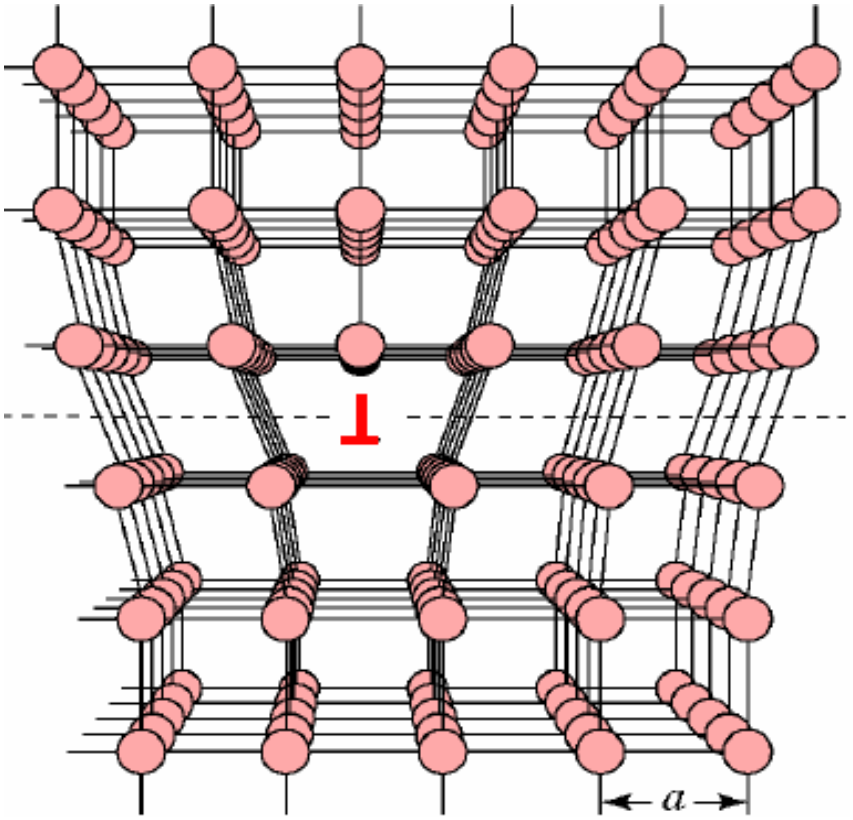
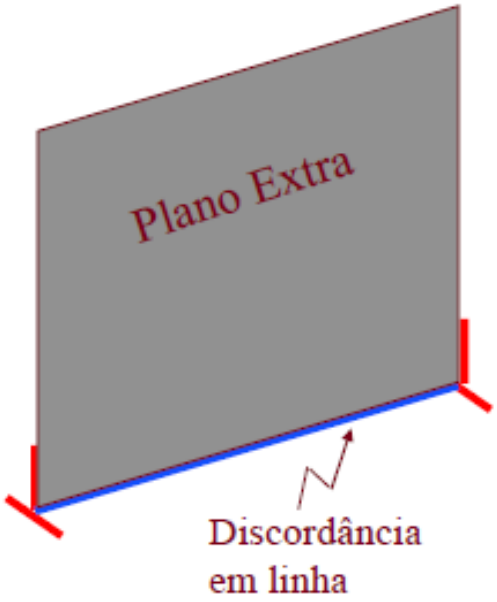
# Defeitos de linha



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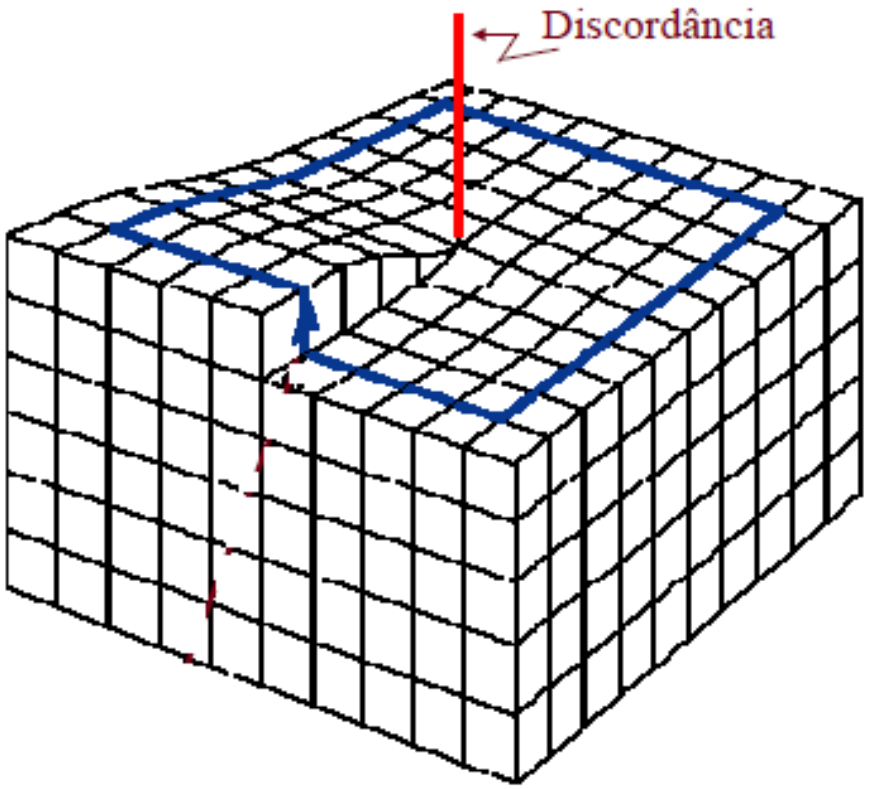
# Defeitos de linha



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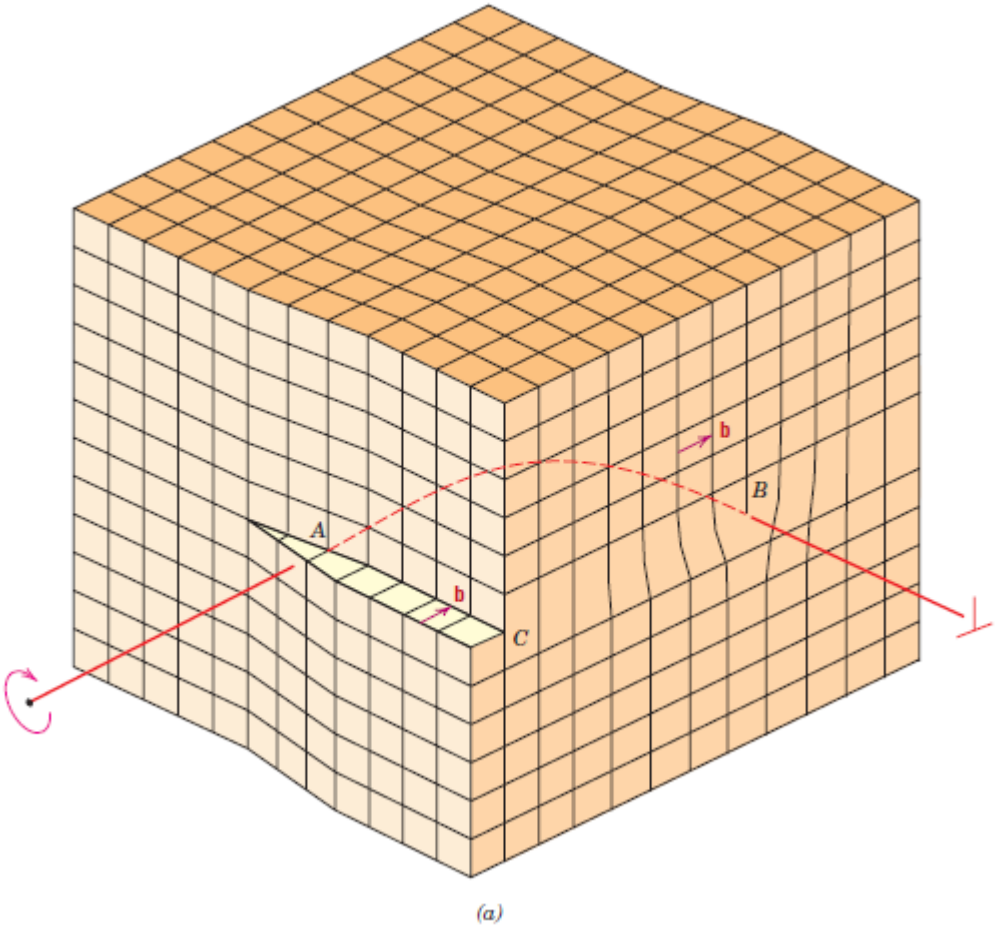
# Defeitos de linha




(a)

# Defeitos de linha

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

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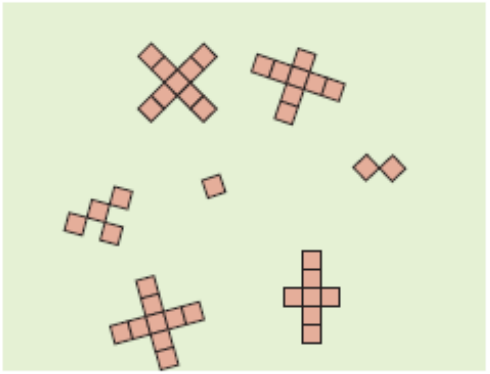
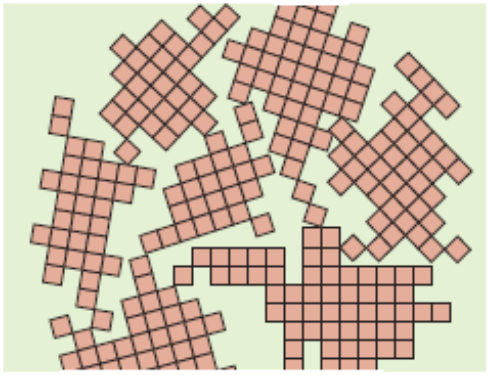
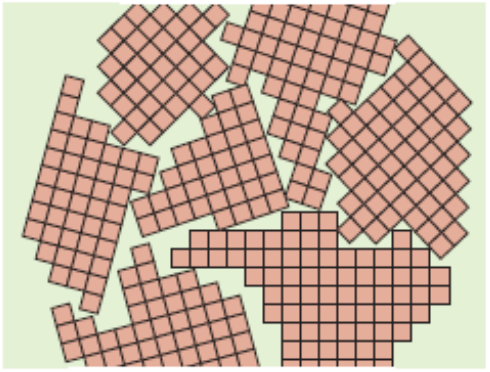
# Defeitos de superfície



(a)



(b)



(c)

(d)

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# Defeitos de superfície

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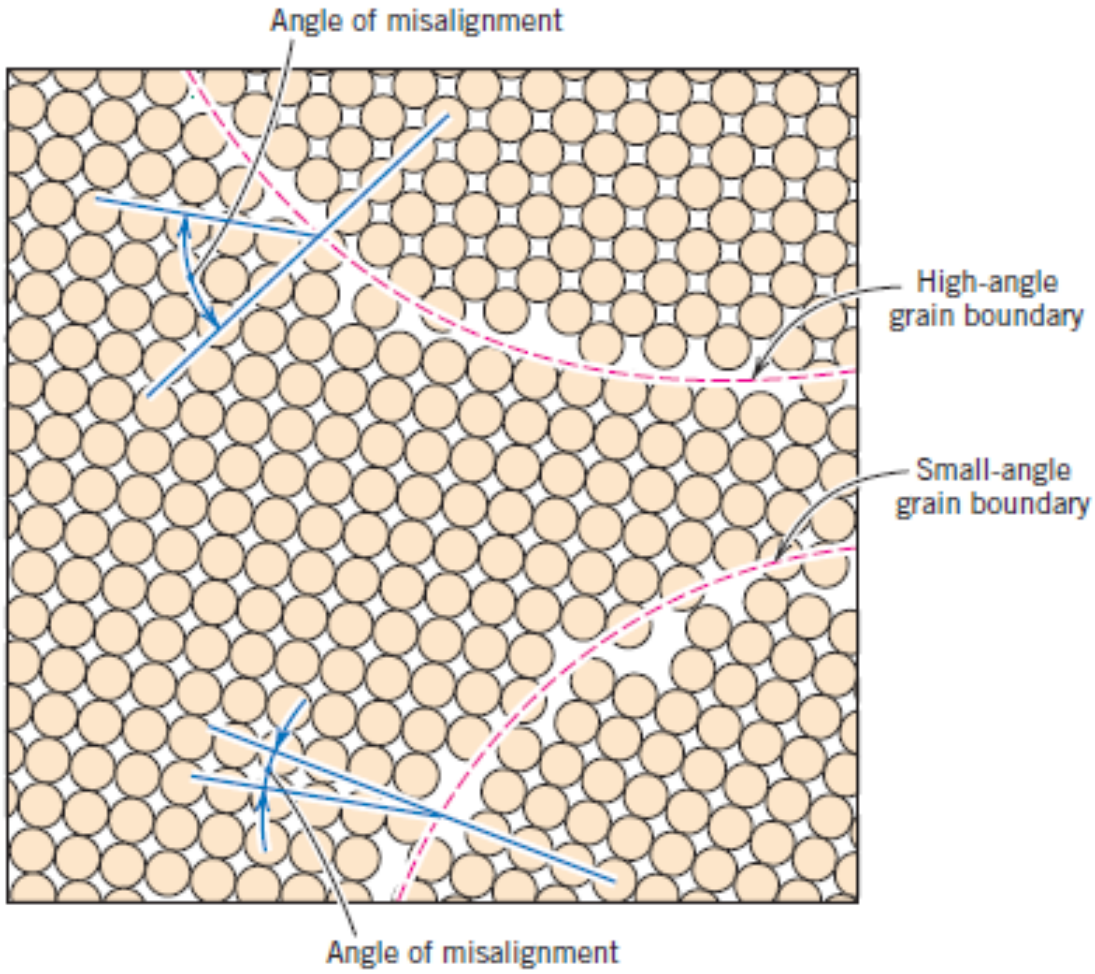
# Defeitos de superfície



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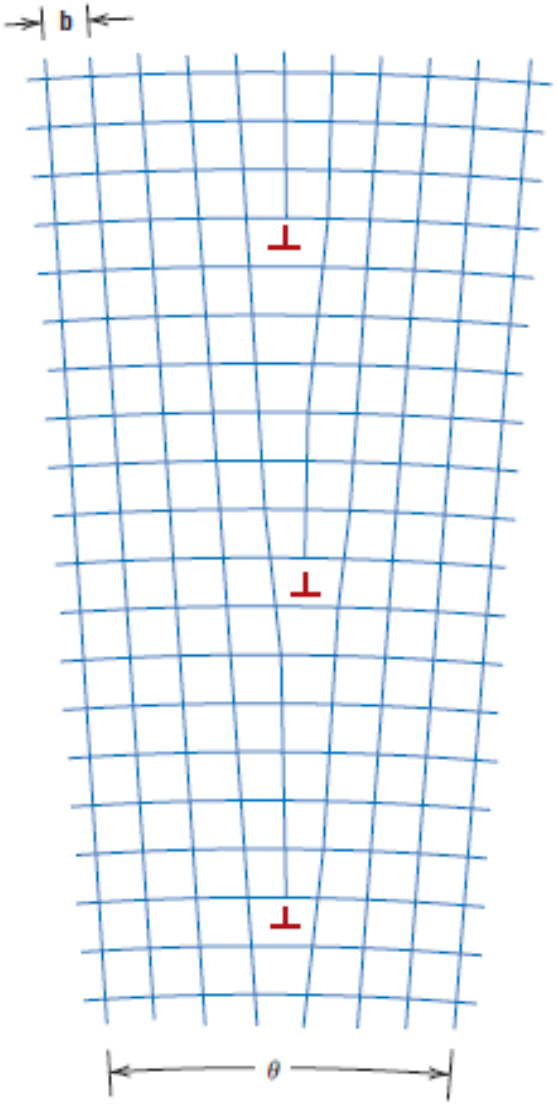
# Defeitos de superfície



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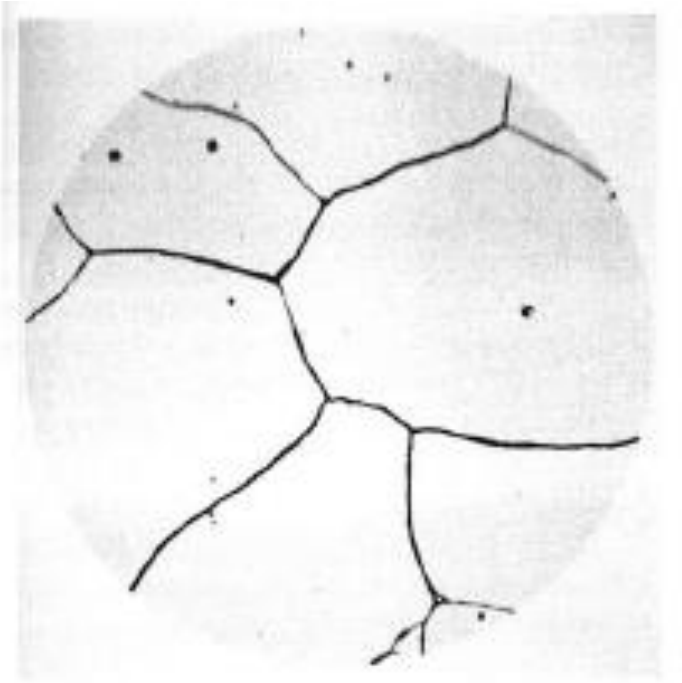
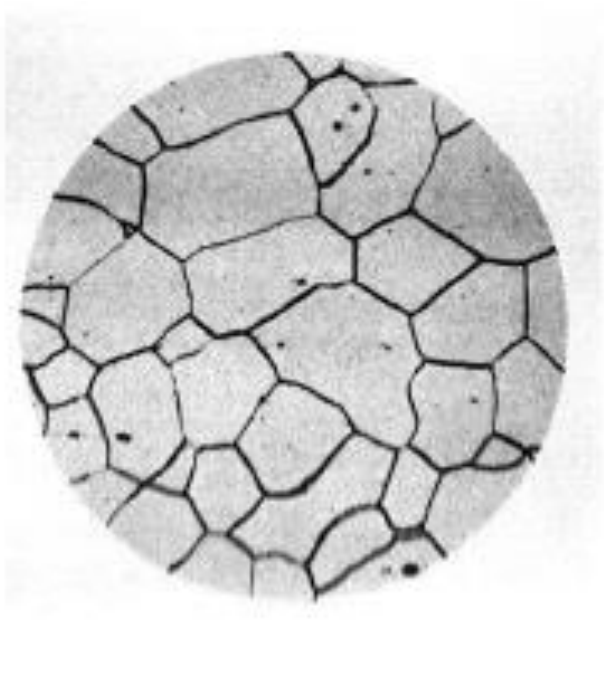
# Defeitos de superfície



(a) Grain Size, G = 1



(b) Grain Size, G = 4

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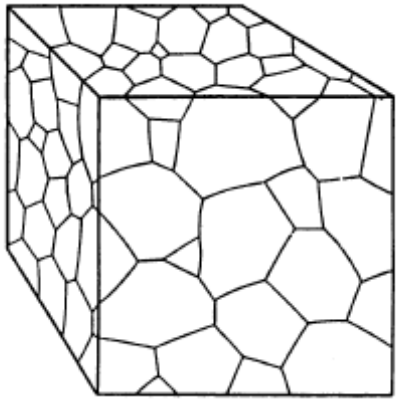
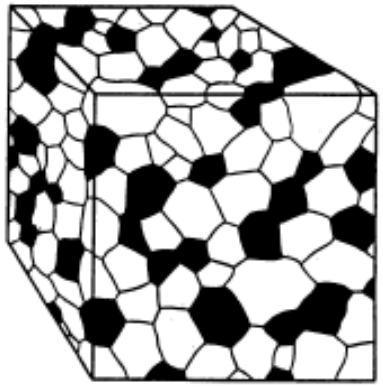
# Defeitos de superfície



contorno de grão



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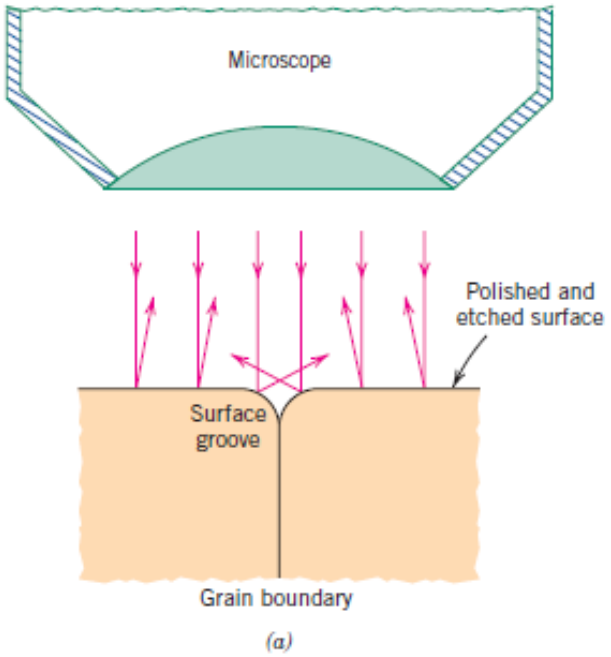
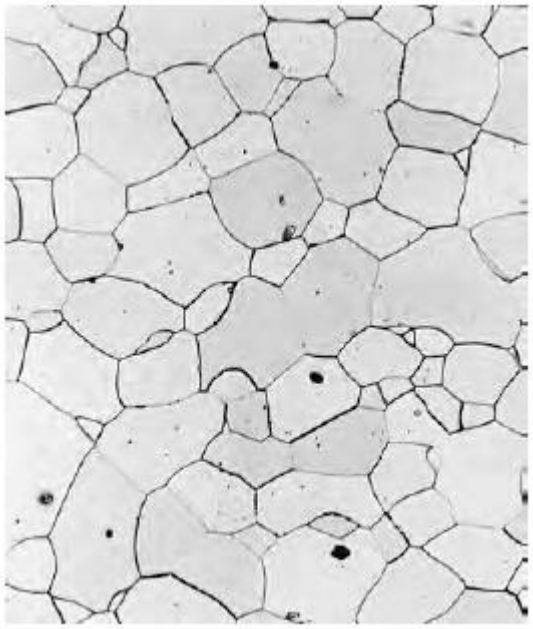
# Contornos de grão




(a)



(b)