

Estructura de la Materia 2

Clase 6 - Teoría

Docentes

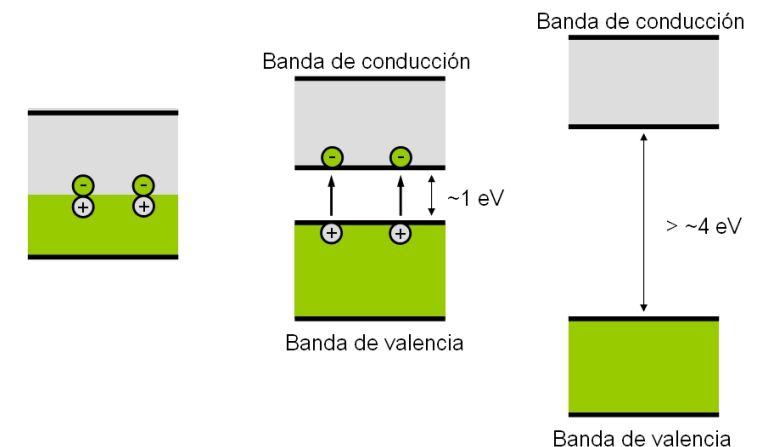
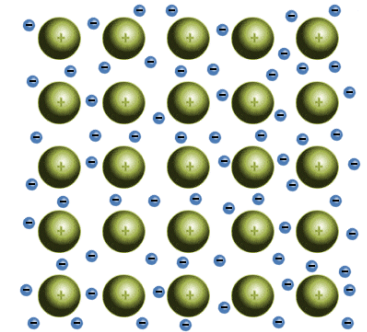
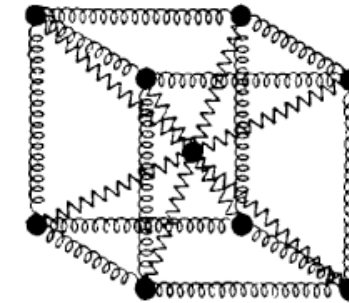
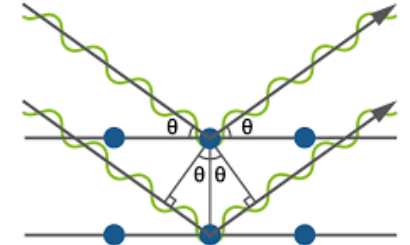
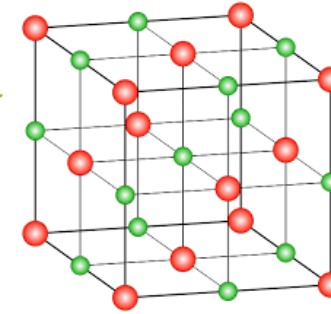
Gustavo Grinblat, Andrea Barral, Juan Herrera Mateos

Departamento de Física, FCEN, UBA – Curso de Verano, 2022

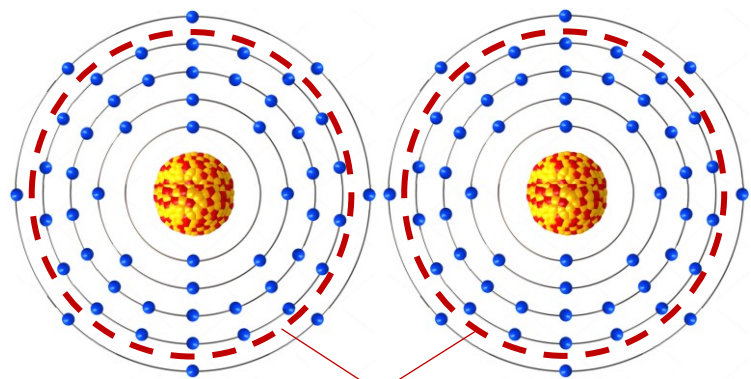
Web: <http://materias.df.uba.ar/edlm2a2022v>

Programa de la materia

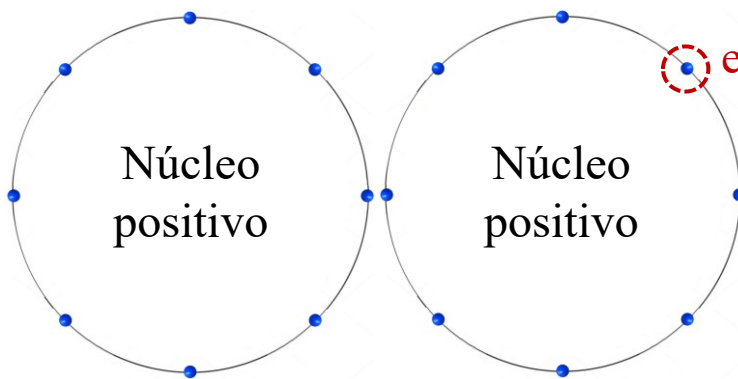
- Red cristalina, red recíproca y difracción de rayos X ✓
- Clasificación de los sólidos y energía de cohesión ✓
- Vibraciones, fonones y propiedades térmicas ✓
- Electrones en sólidos (potencial periódico)
- Semiconductores y juntura semiconductor



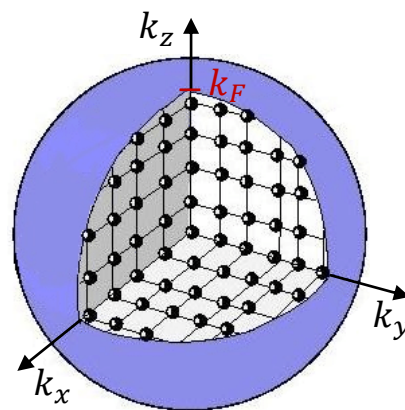
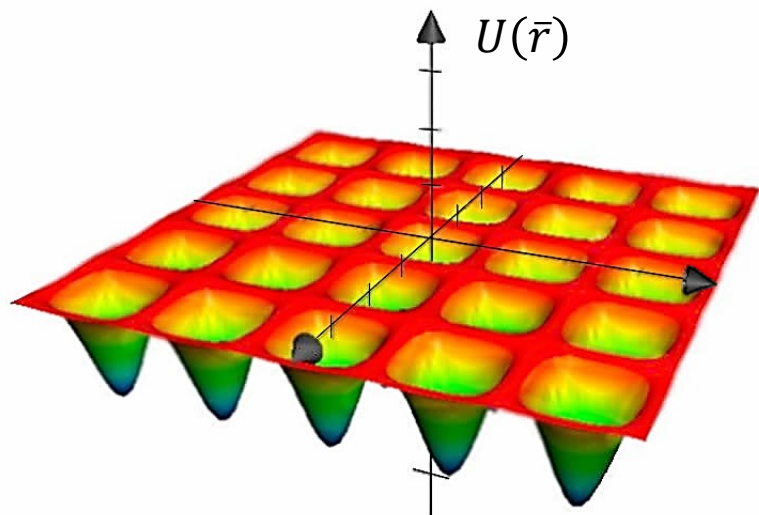
Electrones en sólidos



Niveles aquí dentro no se modifican notablemente al formar el sólido



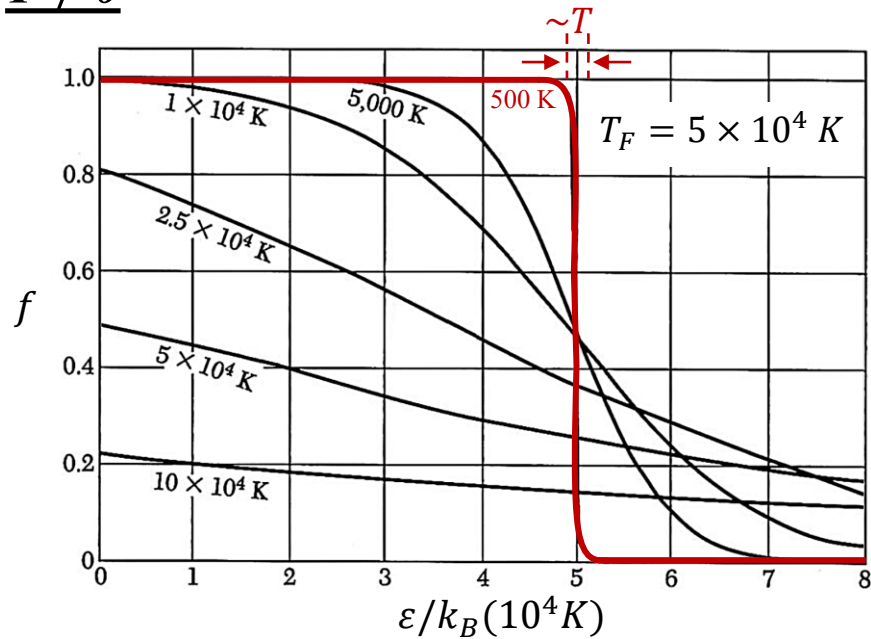
e⁻ de valencia
(Su comportamiento sí se modifica al formar el sólido)



Esfera de Fermi

Gas de electrones libres

$T \neq 0$



$$f(\varepsilon) = \frac{1}{e^{(\varepsilon - \mu)/k_B T} + 1}$$

Calor específico a baja temperatura

$$c_v = c_v^{el} + c_v^{fon} = AT + BT^3$$

$$A_{exp} = 2.1 \frac{mJ}{molK^2}; A_{teo} = 1.8 \frac{mJ}{molK^2}$$

$$B = 2.6 \frac{mJ}{molK^4} \longrightarrow \Theta_D = 100 K$$

