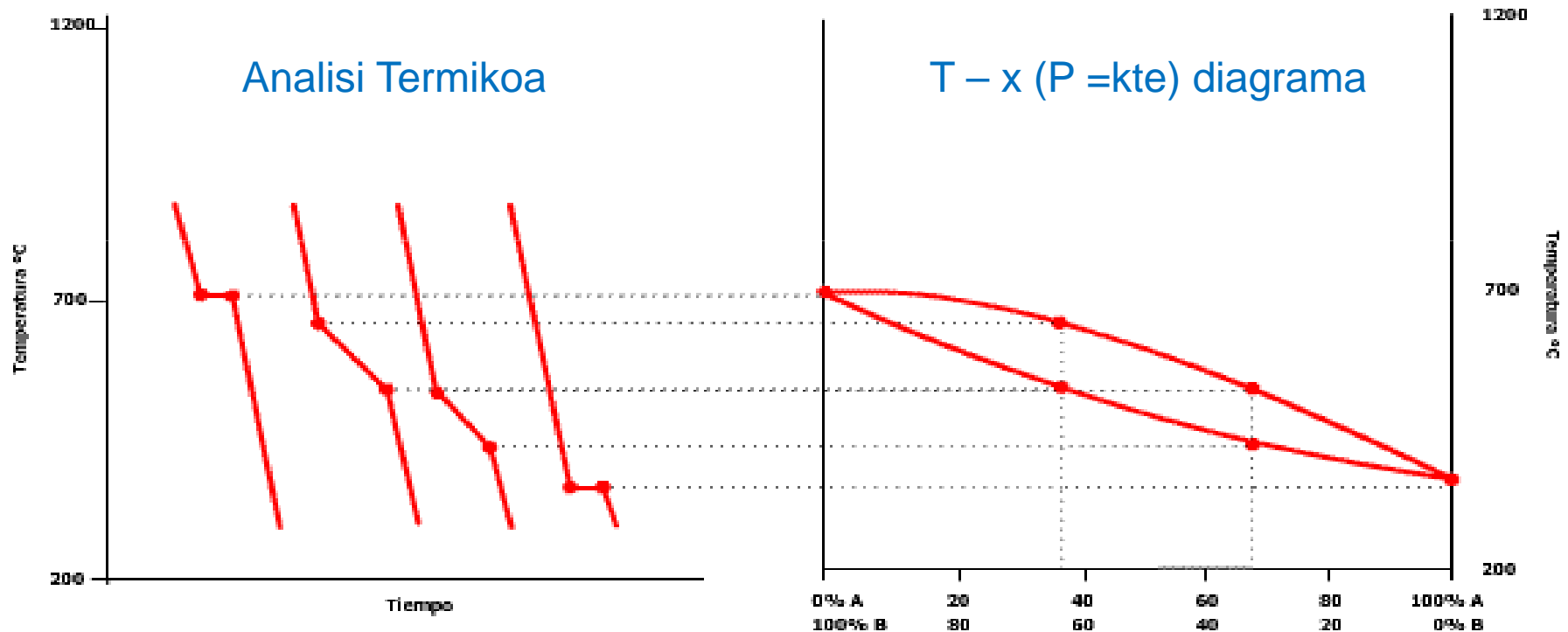


IV. FASEEN ARTEKO OREKA

P6. Sistema Bitarren Solido-Likido Fase-Diagrama

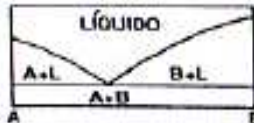
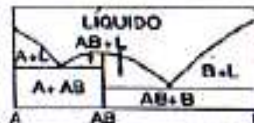
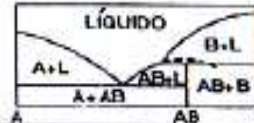
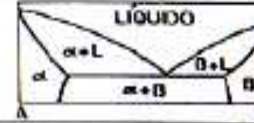
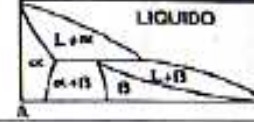
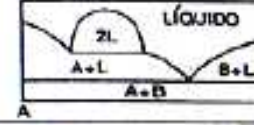
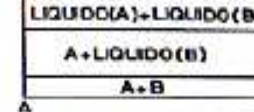


Esperimentazio Kimika Fisikoan

Open Course Ware

<http://ocw.ehu.es/course/view.php?id=207>

OINARRI TEORIKOA

Miscibilidad en estado				TIPO		
LIQUIDO	SÓLIDO					
SOLIDO = LIQUIDO	TOTAL	NULA	No hay formación de compuestos (eutéctico)		I	
			Hay formación de compuestos	Los compuestos funden congruentemente		II
				Los compuestos funden incongruentemente (peritéctico)		III
	PARCIAL	Una disolución sólida	Eutéctico		V	
			Peritéctico		VI	
		Dos disoluciones sólidas				
	PARCIAL	NULA			VII	
	NULA	NULA			VIII	

→ Eutektiko sinplea, baldintzak:

- ✓ Osagaien artean konpostaurik ez eratzea.
- ✓ Guztiz nahaskorrak fase likidoan, baina nahastezinak egoera solidoan.
- ✓ Baldintza estandarretan ($P = 1 \text{ bar}$) eta $T = 25 \text{ }^{\circ}\text{C}$, biak solidoak.

$T - x$ diagramak ($P = \text{kte}$)
Neurtu hainbat nahastetan fusio T

❖ Termodinaka:

Oreka baldintza:

$$\mu_{i,dis} = \mu_{i,sol} \longrightarrow \mu_{i,s}^* = \mu_{i,l}^* + RT \ln \gamma_i x_i \longrightarrow \ln \gamma_i x_i = -\frac{\Delta G_{fus}(T_f)}{RT_f}$$

$$\ln \gamma_i x_i = \int_{T_{f,i}^*}^{T_f} \frac{\Delta H_{fus,i}(T_f)}{RT_f} dT_f \quad \begin{array}{l} \text{d/dT eginez} \\ \left(\frac{\partial(\partial G / T)}{\partial T} \right)_P = -\frac{\Delta H}{T^2} \end{array}$$

Disoluzio idealak:

- Elkarrekintzak:
A-B \approx A-A \approx B-B
- $\gamma_i = 1 \rightarrow a_i = x_i$
- $\Delta H_{fus} \neq f(T)$ eta kte

$$\ln x_A = \frac{\Delta H_{fus,A}}{R} \left(\frac{1}{T_{f,A}^*} - \frac{1}{T_f} \right)$$

A disolbatzaile

$$\ln x_B = \frac{\Delta H_{fus,B}}{R} \left(\frac{1}{T_{f,B}^*} - \frac{1}{T_f} \right)$$

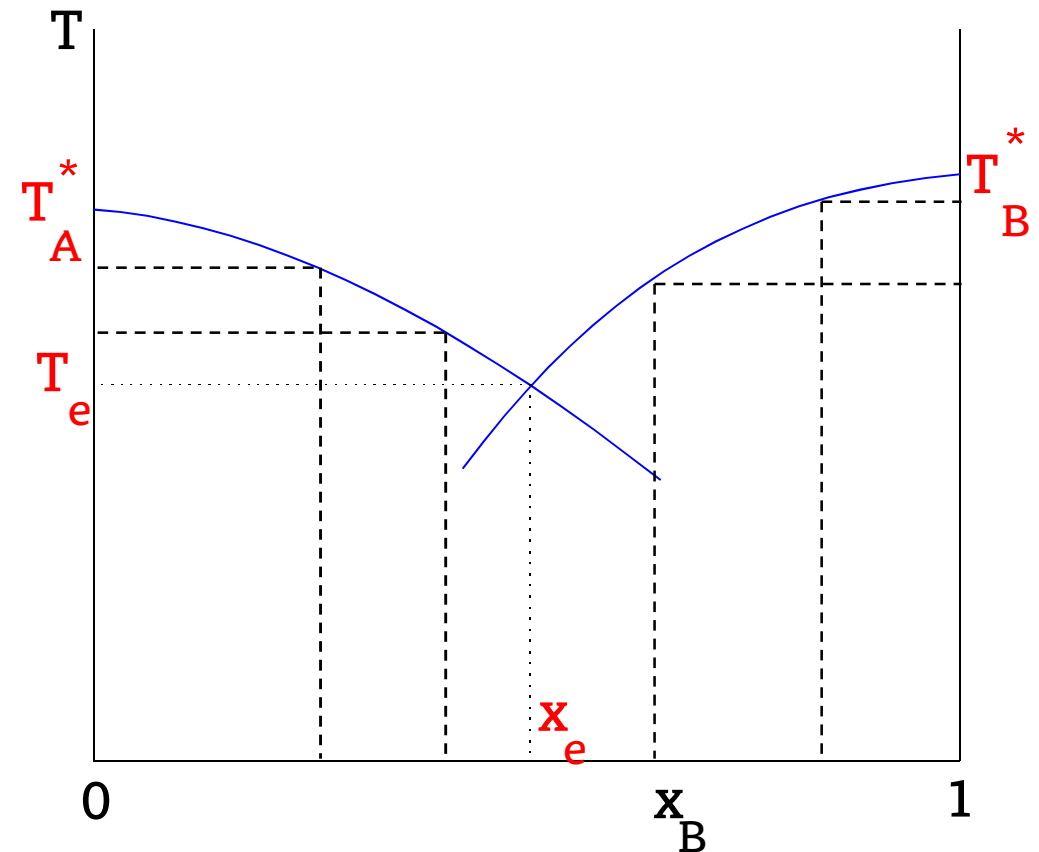
B disolbatzaile

❖ Diagrama T-x Ideala:

Osagai puruen datuak erabiliz (T_{fus} eta ΔH_{fus} , handbook)
Kalkulatu T_{fus} konposizio ezberidnetan

$$T_f = T_{f,A}^* + \frac{RT_{f,A}^{*2}}{\Delta H_{f,A}} \ln x_A$$

$$T_f = T_{f,B}^* + \frac{RT_{f,B}^{*2}}{\Delta H_{f,B}} \ln x_B$$

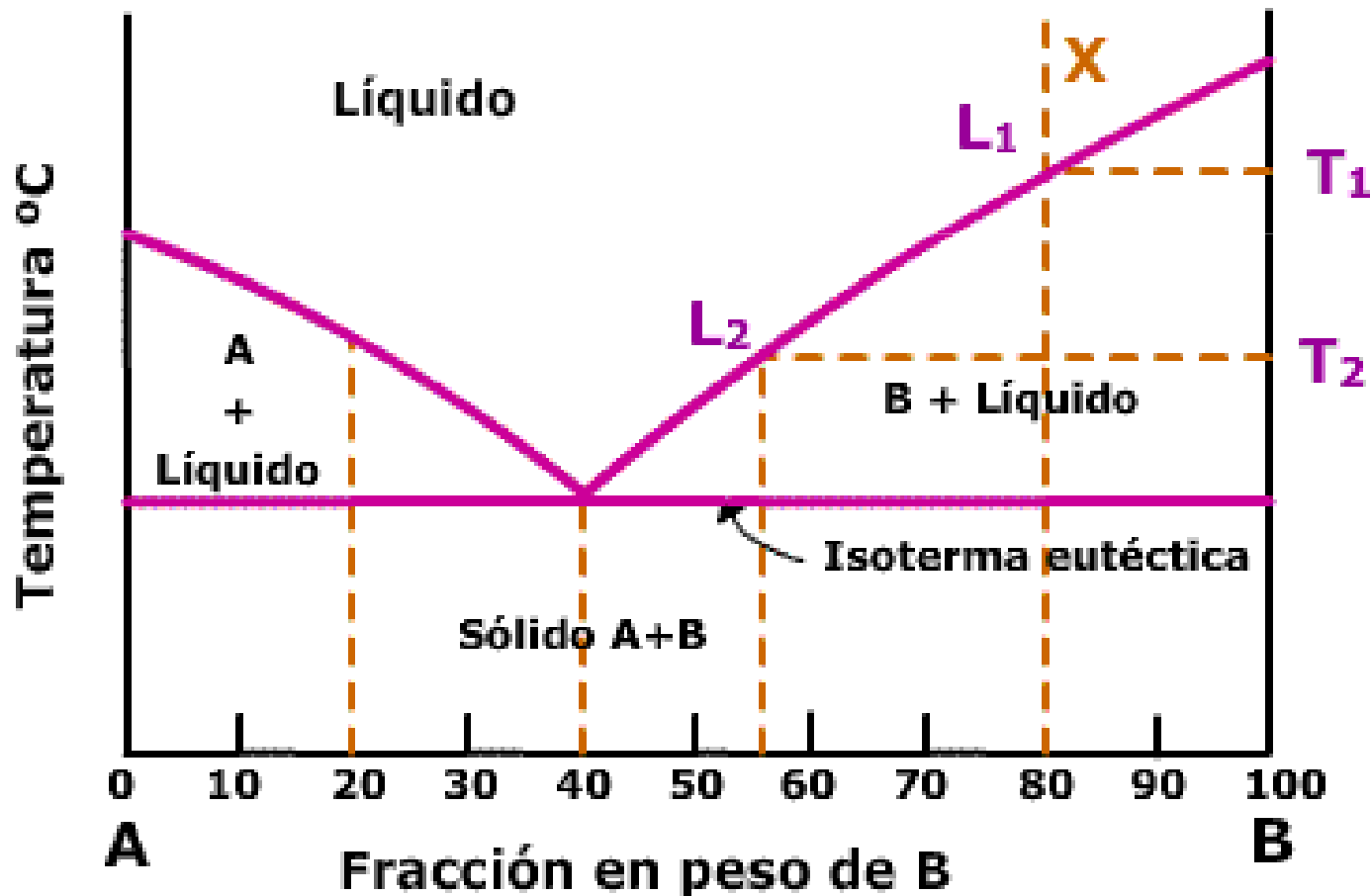


Eutektikoaren T_e eta x_e teorikoak (ez handbookean)

PROZEDURA

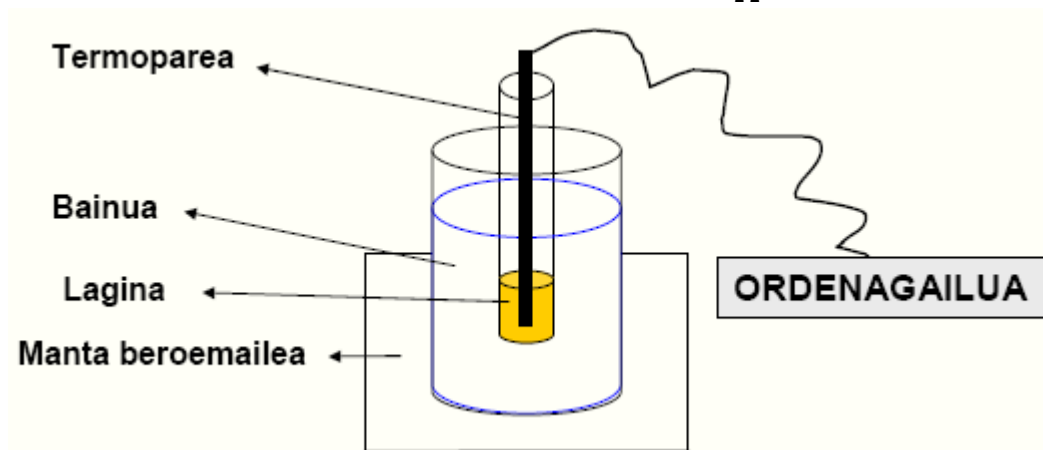
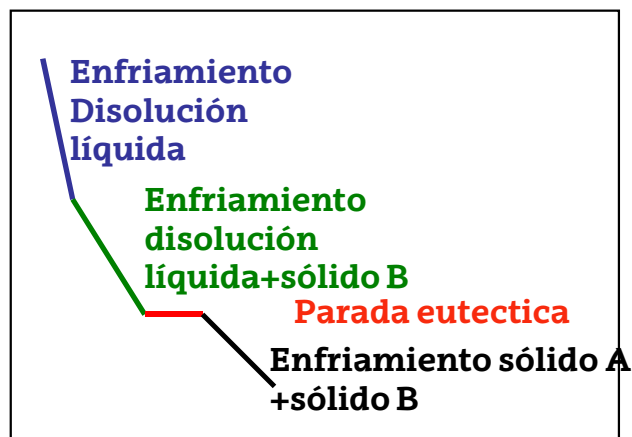
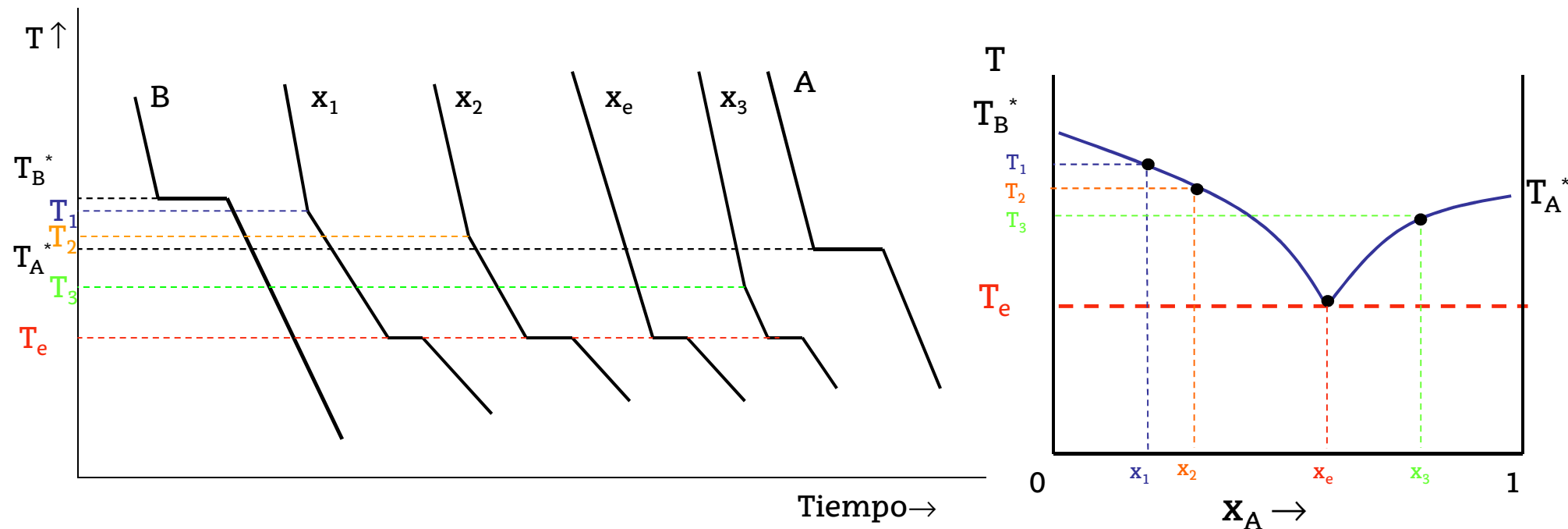
T-x diagrama nahastean T_{fus} neurtuz. **Analisi termikoa (hozte kurbak)**

Eutektikoa – disoluzioa eta osagia solidoak aldi berean. T_{fus} minimoa



❖ Analisi Termikoa:

Konposizio ezaguneko nahasteen hozte kurbatik T_{fus}



❖ Fusio Entalpiak:

 $x > x_{\text{eutec}}$

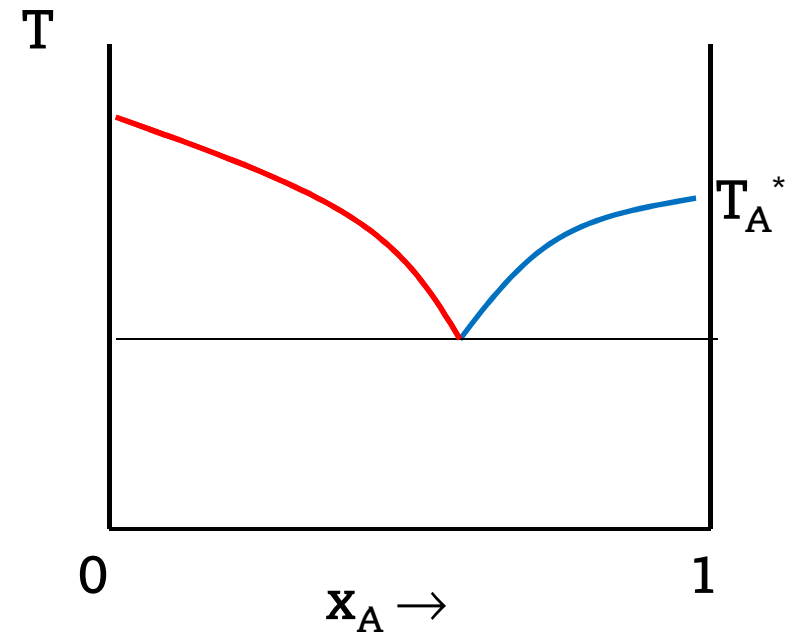
$$\ln x_A = \frac{\Delta H_{\text{fus},A}}{RT_{\text{fus},A}^*} - \frac{\Delta H_{\text{fus},A}}{R} \frac{1}{T_{\text{fus}}}$$

y = o.o. + malda x

 $x < x_{\text{eutec}}$

$$\ln x_B = \frac{\Delta H_{\text{fus},B}}{RT_{\text{fus},B}^*} - \frac{\Delta H_{\text{fus},B}}{R} \frac{1}{T_{\text{fus}}}$$

y = o.o. + malda x



- ✓ Alderatu ΔH_{fus} hauek eta handbook-ekoak
- ✓ Konparatu T_e eta x_e esperiamentalak eta idealak