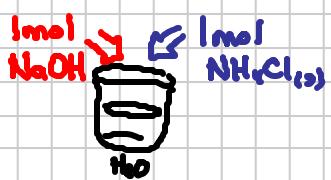
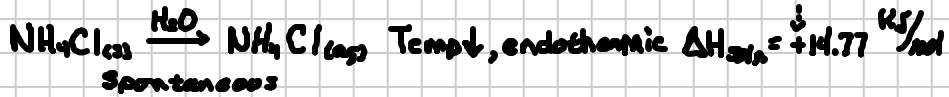
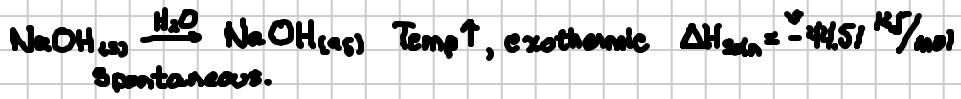


## Lecture 2: Spontaneous Solution Formation

Note Title

THIS PAGE IS FOR



$$\Delta H_{\text{soln}} = \Delta H_{\text{soln, NaOH}} + \Delta H_{\text{soln, NH}_4\text{Cl}}$$

$$= -44.51 \text{ kJ/mol} + 14.77 \text{ kJ/mol}$$

Spontaneous.

$$\Delta H_{\text{soln}} = -29.74 \text{ kJ/mol}$$

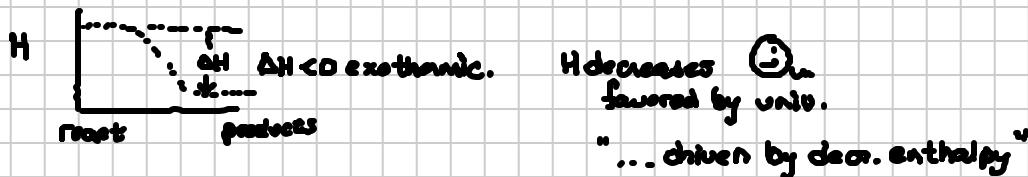
(-) exothermic

Spontaneous: - require no help from us (stirring).

- Self acting ... ind. of external influence.

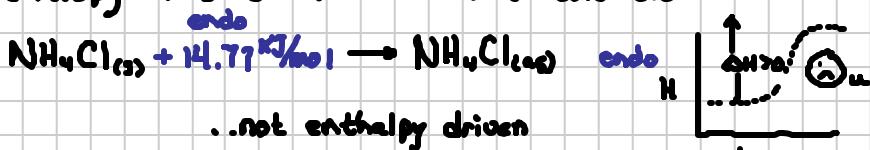
2 factors that affect spontaneity

1) Universe favors processes where energy (enthalpy) decreases.

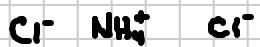


2) Universe favors processes where Entropy increases

Entropy measure of randomness and disorder.

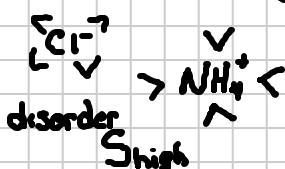
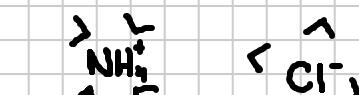
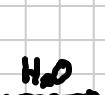


Crytstal reactants



Highly ordered pieces

$S_{\text{low}}$



$\Delta S > 0$

smiley face