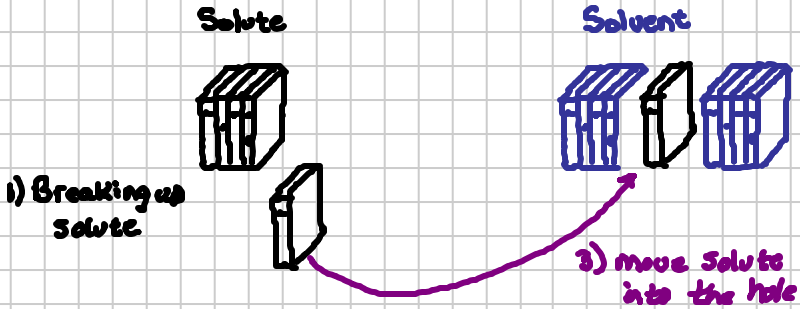
Note Title

Lecture 1.3 Energetics of Solution Formation

Solution Formation: A 3-step Process

Example: Re-shelving a book...



Example. Solute: NaOH Solvent: H_2O

1) Break up solute: NaOH

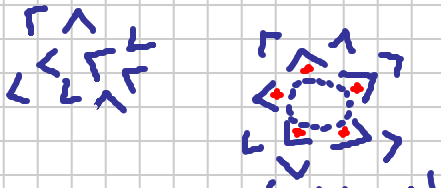
Na^+ OH^- → OH^- Lattice Energy.

OH^- Na^+ → Na^+

... requires energy (endothermic process)

... $\Delta H_{solute} > 0$ ... costing you.

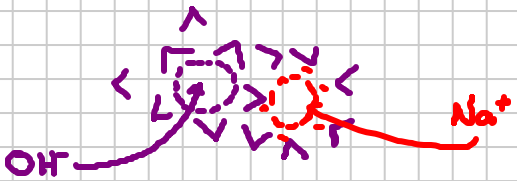
2) Create a hole in solvent.



... requires energy (endothermic)

... $\Delta H_{solvent} > 0$ ... cost you.

3) Put the solute ions into holes in solvent



.. Always releases heat (exothermic)

... $\Delta H_{mixing} < 0$

endothermic endothermic exothermic

$\Delta H_{solution} = \Delta H_{solute} + \Delta H_{solvent} + \Delta H_{mixing}$