

CHE 112 - Homework - Ch 12a
Review + Solvation Process I

5. Sketch a picture showing the how MgBr_2 would dissolve in H_2O
6. Br_2 is much more soluble in tetrachloromethane (CCl_4) than in water. Explain.
7. Define the term 'Enthalpy', include the symbol, the typical units, and sign conventions for it.
8. Define the term 'Entropy', include the symbol, the typical units, and sign conventions for it. Why is it dependent on temperature?
9. Define the term 'Gibbs Free Energy', include the symbol, the typical units, and sign conventions for it. Also include an equation relating Gibbs Free Energy, Enthalpy and Entropy.

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10. What are the 3 main interactions that determine the solubility of a solid in a liquid? What is the sign of ΔH for each? Explain.

11. Why is ΔS generally positive for the process of dissolving solids in liquids?

12. Which would you expect to have the larger hydration energy, SO_4^{2-} or ClO_4^- ? Explain.

13. Why do ionic substances with higher lattice energies tend to be less soluble in water than substances with lower lattice energies?

14. For each of the three situations below indicate whether the solution will get (C)older, (H)otter, or (S)tay the same. Explain.

(a) $|\Delta H_{\text{solute}} + \Delta H_{\text{solvent}}| > |\Delta H_{\text{mix}}|$ 14(a) _____

(b) $|\Delta H_{\text{solute}} + \Delta H_{\text{solvent}}| < |\Delta H_{\text{mix}}|$ 14(b) _____

(c) $|\Delta H_{\text{solute}} + \Delta H_{\text{solvent}}| \approx |\Delta H_{\text{mix}}|$ 14(c) _____

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