
Extraction

Problem 10-12

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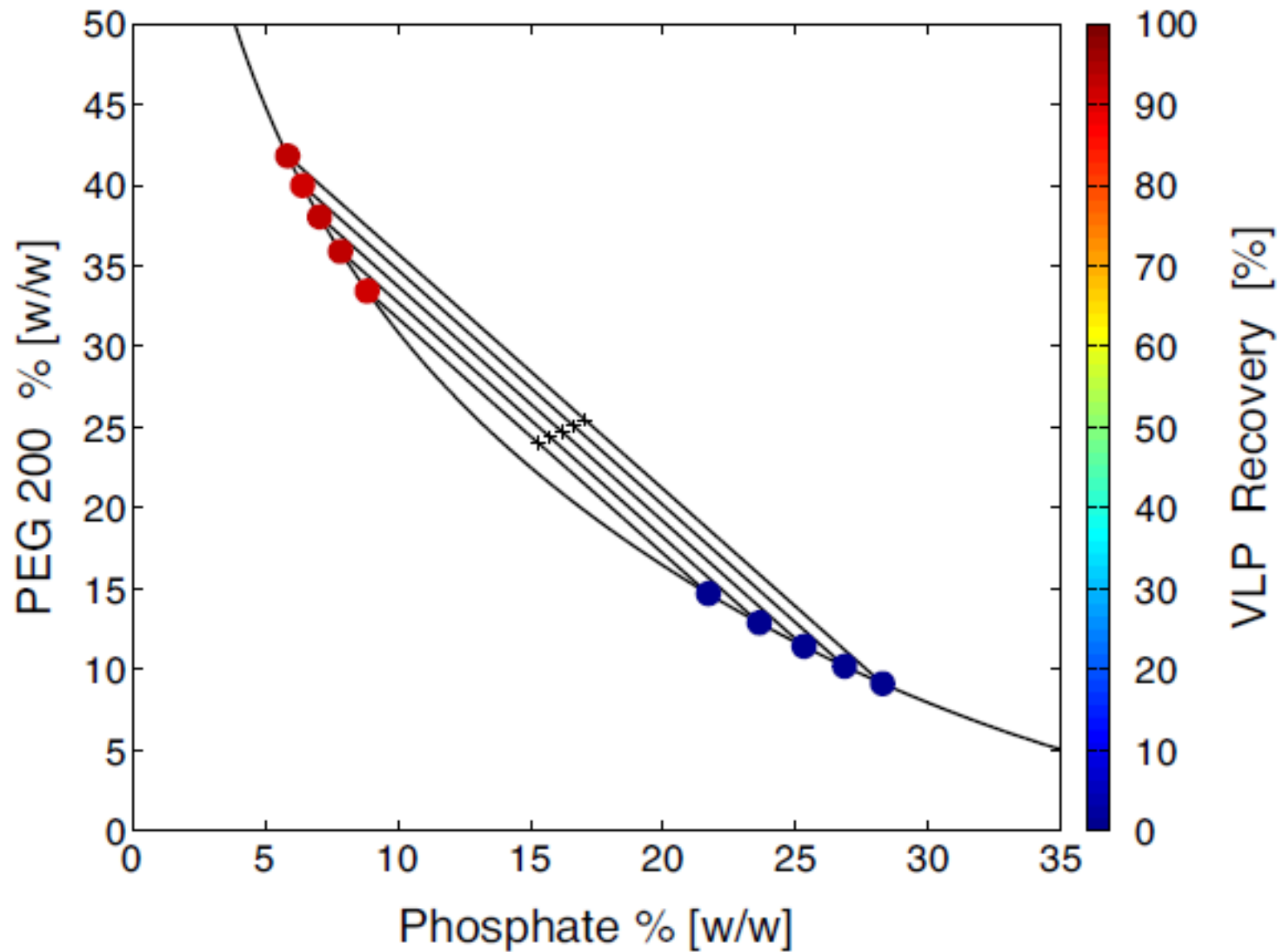
Aqueous two phase extraction is used to recover α -amylase from solution. A polyethylene glycol-dextran mixture is added and the solution separates into two phases. The partition coefficient is 4.2. Calculate the maximal possible enzyme recovery for:

1. The volume of the upper to lower phase is 5.0
2. The volume of the upper to lower phase 0.5
3. Estimate the partition coefficient when the molecular size of the polymers are doubled.

You have measured the tie-lines and distribution of a compound e.g. virus-like particles in an ATPS system consisting of PEG and phosphate.

1. Calculate for the system shown in Figure 1 the composition of the upper and lower phases for all four compositions.
2. Plot the tie line as a function of phosphate and PEG in the lower and upper phase.
3. Calculate the distribution coefficient for the VLP for all four compositions

Problem 11 (Figure 1)



Calculate the Energy of **interdispersing** polymer (PEG) and solvent molecules using the Flory Huggins theory for the system shown Figure 1 problem 11. Neglect the influence of salt.