作业 018

A 类

1. 化合物 A 在薄层板上从原点迁移 7.6 cm，溶剂前沿距原点 16.2 cm，
   (a) 计算化合物 A 的 Rf 值。
   (b) 在相同的薄层系统中，溶剂前沿距原点 14.3 cm，化合物 A 的斑点应在此薄层板上何处？
      （0.47，6.72 cm）

2. 已知 A 与 B 二物质的相对比移值为 1.5。当 B 物质在某薄层板上展开后，色斑距原点 9 cm，溶剂前沿到原点的距离为 18 cm，问若 A 在此板上同时展开，则 A 物质的展距为多少？A 物质的 Rf 值为多少？
   （13.5 cm，0.75）

3. Saito described a quantitative spectrophotometric procedure for iron based on a solid-phase extraction using bathophenanthroline (邻菲啰啉) in a poly(vinyl chloride) membrane. In the absence of Fe²⁺, the membrane is colorless, but when immersed in a solution of Fe²⁺ and I⁻, the membrane develops a red color as a result of the formation of a Fe²⁺–bathophenanthroline complex. A calibration curve determined using a set of external standards with known molar concentrations of Fe²⁺ gave a standardization relationship of \[ A = (8.60 \times 10^3 \text{ M}^{-1})[\text{Fe}^{2+}] \] What is the concentration of iron in parts per million for a sample with an absorbance of 0.100?
   (MAC p 452. 0.648 ppm)

B. 类

1. 思考
   1）ACT p.303: 8.6, 8.7, 8.8, 8.9, 8.10
   2）思考：在吸附薄层色谱中如何选择展开剂？欲使某极性物质在薄层板上移动速度快些，展开剂的极性应如何改变？

参考文献：http://www1.syphu.edu.cn/fxhx/image/documents/18.doc

2. The concentration of the barbiturate barbital in a blood sample was determined by extracting 3.00 mL of the blood with 15 mL of CHCl₃. The chloroform, which now contains the barbital, is then extracted with 10.0 mL of 0.045 M NaOH (pH ≈ 13). A 3.00-mL sample of the aqueous extract is placed in a 1.00-cm cell, and an absorbance of 0.115 is measured. The pH of the sample in the absorption cell is then adjusted to approximately 10 by adding 0.5 mL of 16% w/v NH₄Cl, giving an absorbance of 0.023. When 3.00 mL of a standard barbital solution with a concentration of 3.0 mg/100 mL is taken through the same procedure, the absorbance at pH 13 is 0.295, whereas that at a pH of 10 is 0.002. Report the concentration of barbital, (milligrams per 100 mL), in the
sample.

(MAC p453. 0.90 mg barbital /100 ml)

C. 类

文献选择性阅读：（ChemPP，请在TSSXMU上下载或浏览）
阅读文献Countercurrent extraction – Craig apparatus，理解色谱分离过程的热力学平衡。尝试用Excel绘制具有不同分配比的二元体系的色谱分离曲线。