Further information

Liquid/liquid partitioning

All the rules given above were illustrated with examples from air/liquid phase partitioning. However, they can also be applied to partitioning between two liquid phases if one phase remains constant and only the other phase changes. The problem of extracting a compound *i* from a water sample may serve as an example: for an effective extraction we need to find the solvent with the highest solvent/water partition constant for the desired compound i. For this task we do not have to consider the interactions of *i* in water (i.e., how much does compound *i* like to leave the water phase) because these stay the same no matter which solvent is looked at. The only question that matters is 'How much does compound *i* like the various solvents?'. This is identical to the question that we have discussed above when dealing with **air** /solvent partitioning.

Illustrative Example

We are looking for a good solvent to extract pyridine from a water sample. According to the discussion above a monopolar, H-donor solvent like chloroform should be suited best for the extraction of an H-acceptor molecule like pyridine. The experimental water/solvent partition constants of pyridine confirm this (all data in [m^3 m^{-3}])

$K_{hexane/water} = 0.62$ $K_{CCl4/\ water} = 1.7$ $K_{diethyl\ ether/water} = 1.2$ $K_{CHCl3/water} = 23$

Exercise

Have a look at selftest 13) for some training.

Intermolecular Interactions in every day life

Many things in our every day life are affected by the same intermolecular interactions that also govern the partitioning of molecules. At then end of this chapter we have collected some examples (Geckos, GoreTex™ and others). You may want to take a look at them now.