

## Answer on Question #43446 - Chemistry - Physical Chemistry

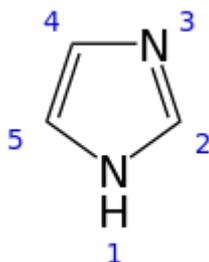
### Question:

Hi, I was wondering in the case of comparing pyridine, pyrimidine and imidazole, which is the most basic?

I know that in pyrimidine the Nitrogen electrons are delocalized in the aromatic ring and thus the electrons are not available for electron donating (correct me if I'm wrong) Thus pyridine is more basic than pyrimidine. But why imidazole is more basic than pyridine?

### Answer:

Imidazole molecule contains two nitrogen atoms. Both carry the unshared pair of electrons.



The electron pair from atom 1 is conjugated with the aromatic ring and therefore has the basicity close to one in the pyrrole. However, the atom 3 carries the electron pair which is orthogonal to the aromatic ring orbitals and cannot interact with them. This electron pair is basic enough to be protonated in aqueous solutions:

