**CHEM 8B, Lecture 12 – Amines**

- Reaction Review

- Acid-Base Properties (pKa’s vs. pKb’s)



Review Amine Reactions



Acidity of Amines

**pKa** = - log Ka…**Ka** = acid dissociation constant

 **pKa 35**

 **pKa 15**  (38 actually)

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Basicity of Amines

pKb = - log Kb…Kb = base dissociation constant

  **pKb >>5 pKb 5**

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**Synthesis of 1°Amines**

Simple Substitution (SN2)



It’s not all bad!



Simple Solution



**Synthesis of 1°Amines (cont’d)**

More elegant solution: New nitrogen-nucleophile that alkylates only once

|  |  |
| --- | --- |
|  |  |

Azides

SN2 – limited to making 1° amines next to 1° carbons



Gabriel Synthesis



**Synthesis of More Amines: Reductive Amination**





*Imine Mechanism*



Using reductive amination to synthesize each amine…



**Acyl Capping in EArS Reactions**





*Draw these mechanisms…*







*Friedel-Crafts Issues with Aniline*





*The Long Road to Morphine*





**Reaction Recap**

Four different ways to make the same amine, plus reductive amination action…



**Make your own puzzles!**

Start by thinking of two ways to make each amine below plus one reaction you can do with it. Then, continue the party by thinking of ways to make those starting materials and so on. It was not my intention for the 2 amines to be connected in the puzzle.



