

Experiment No. 8

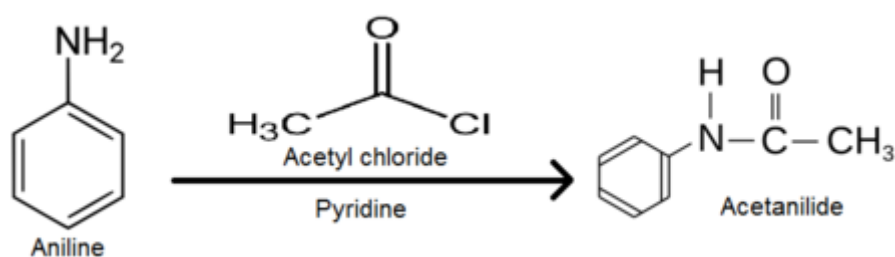
Aim of the experiment: To synthesize acetanilide from aniline.

Apparatus required: 250 ml round bottomed flasks, beakers, reflux condenser, buchner flasks, buchner funnel, thermometer, etc.

Chemicals required: Glycine, sodium hydroxide, benzoyl chloride, concentrated hydrochloric acid and carbon tetrachloride.

Principle: Acetylation reaction is nothing but addition of acetyl moiety instead of an active hydrogen atom present in hydroxyl (OH), primary amino (NH₂) or secondary amino group (NH). This particular reaction basically bears a close similarity to the concept of benzylation except that in this specific instance the reagent is (acetyl chloride) which reacts in the presence of pyridine or 10% NaOH. The amines are more soluble in acid chloride than in sodium hydroxide, the reaction occurs preferably of acetanilide; the liberated hydrochloric acid was neutralized by sodium hydroxide which also catalyze the reaction.

Reaction:



Procedure: Place 2.6 gm (2.5 ml) of aniline and 25 ml of 10 per cent sodium hydroxide solution in a 75 or 100 ml conical flask, and then add 4.3 g (3.5 ml) of acetyl chloride, stopper, and shake vigorously for 10 minutes. Heat is evolved in the reaction. The crude benzoyl derivative separates as a white powder. Filter off the product with suction on a small Buchner funnel, break up the mass on the filter, wash well with water, and drain. Recrystallize from hot alcohol. Report the yield and melting point of the product.

Calculation

Percentage yield = (practical yield/theoretical yield) × 100