A New Method for the Synthesis of Arylstibonic Compounds

Preliminary Communication

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In a recent paper Hanby and Waters\(^1\) have shown, that arylarsines are formed in following reaction (in acetone suspension):

\[
3 \text{RN}_2\text{Cl} + \text{AsCl}_3 + 3 \text{Zn} = R_3\text{As} + 3 \text{N}_2 + 3 \text{ZnCl}_2
\] (1)

While working on the preparation of some antimony compounds, I have found a similar procedure advantageous.

By adding antimony trichloride to a diazonium salt solution, a double salt, of the composition \(\text{RN}_2\text{Cl},\text{SbCl}_3\) is formed in nearly quantitative yield.\(^2\) The intention was to decompose this salt under such conditions that:

\[
\text{RN}_2\text{Cl},\text{SbCl}_3 = \text{R}\text{SbCl}_4 + \text{N}_2
\] (2)

would be the main reaction, but I found, that only compounds with reducing power were catalytically active, and therefore (2) was more or less accompanied by:

\[
2 \text{RN}_2\text{Cl},\text{SbCl}_3 - 2 \text{Cl} = R_3\text{SbCl}_3 + \text{SbCl}_3 + 2 \text{N}_2
\] (3)

and:

\[
3 \text{RN}_2\text{Cl},\text{SbCl}_3 - 4 \text{Cl} = R_3\text{SbCl}_2 + 2 \text{SbCl}_3 + 3 \text{N}_2
\] (4)

Suspended in dry acetone the double salts are decomposed at 0\(^\circ\)C by sodium iodide, iron, ferrous chloride, copper, cuprous chloride etc. Also many organic compounds, for instance formaldehyde, hydroquinone, etc., catalyze the decomposition, but require acetone with 5—10 % water.
ARYLSTIBONIC COMPOUNDS

With sodium iodide the yield of stibonic acid is as good as or better than by the Scheller reaction 3 and only small amounts of diarylstibonic chloride are formed. With iron (ferrum reductum) as a catalyst, (3) is the main reaction and the diarylstibonic chloride is formed in good yield. The experimental data and discussion of the reaction will be published later.

REFERENCES


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