## ELECTROCHEMICAL VARIATION OF THE

## BORODIN - HUNSDIECKER REACTION

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The Borodin-Hunsdiecker reaction, the reaction of the Ag salts of carboxylic acids with halides, is widely used to obtain haloalkanes [1]

RCOOMe  $\xrightarrow{\text{Hal}_{s}}$  RHal + CO<sub>2</sub> + MeHal

We established that the electrolysis of either acetic or trifluoroacetic acid in the presence of  $Br_2$  leads smoothly to the respective formation of  $CH_3Br$  and  $CF_3Br$  in good yields. The most probable scheme for the process is the reaction of the  $CH_3$  (or  $CF_3$ ) radical, which is formed as the result of the discharge of the anion of the acid and decarboxylation, with the bromine molecule

 $RCOO^{\bullet} \xrightarrow{-e} RCOO^{\bullet}$  $RCOO^{\bullet} \xrightarrow{-CO_{2}} R^{\bullet}$  $R^{\bullet} + Br_{2} \rightarrow RBr + Br^{\bullet}$ 

A mixture of 105 ml of glacial acetic acid, 6 g of  $CH_3COONa$ , and 27.7 g of  $Br_2$  was subjected to electrolysis at a Pt anode (surface area of anode 23 cm<sup>2</sup>) for 22 h (32 V, 0.9 A) until the electrolyte was colorless. The gaseous reaction products were condensed and distilled. We obtained 14.6 g of  $CH_3Br$ ; 57% yield when based on bromine.

In a similar manner, from 97.5 g of  $CF_3COOH$ , 6 g of  $CF_3COOK$  and 24.8 g of  $Br_2$ , diluted with 45 ml of absolute acetonitrile, at 10.2 V and 1.08 A, for 16.5 h, we obtained 35.7 g of  $CF_3Br$ ; 77% yield when based on bromine. The identity of the obtained compounds with authentic specimens was shown by GLC and IR spectroscopy.

## LITERATURE CITED

1. R. Johnson and R. Ingham, Chem. Rev., 56, 219 (1956).

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