

# Sandmeyer Reaction

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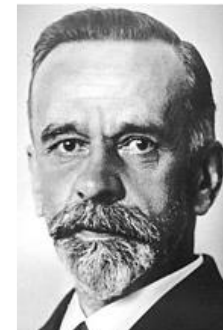
Ning Wei

21-10-2021

# Traugott Sandmeyer

## ■ Life

- 1): Swiss chemist (1854 - 1922)
- 2): Never took a doctorate
- 3): Known for: Sandmeyer reaction

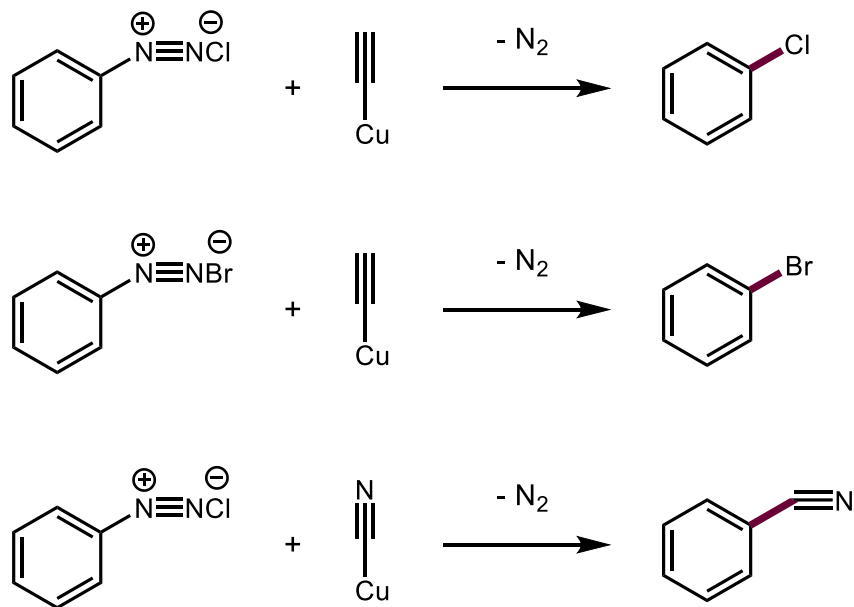


Sandmeyer isonitrosoacetanilide isatin synthesis

Sanmeyer diphenylurea isatin synthesis

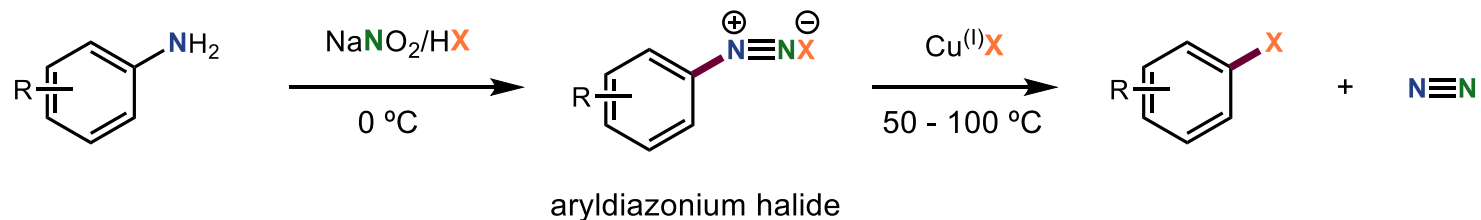
# Sandmeyer Reaction

## ■ How he discovered



# Sandmeyer Reaction

## ■ Sandmeyer (1884):

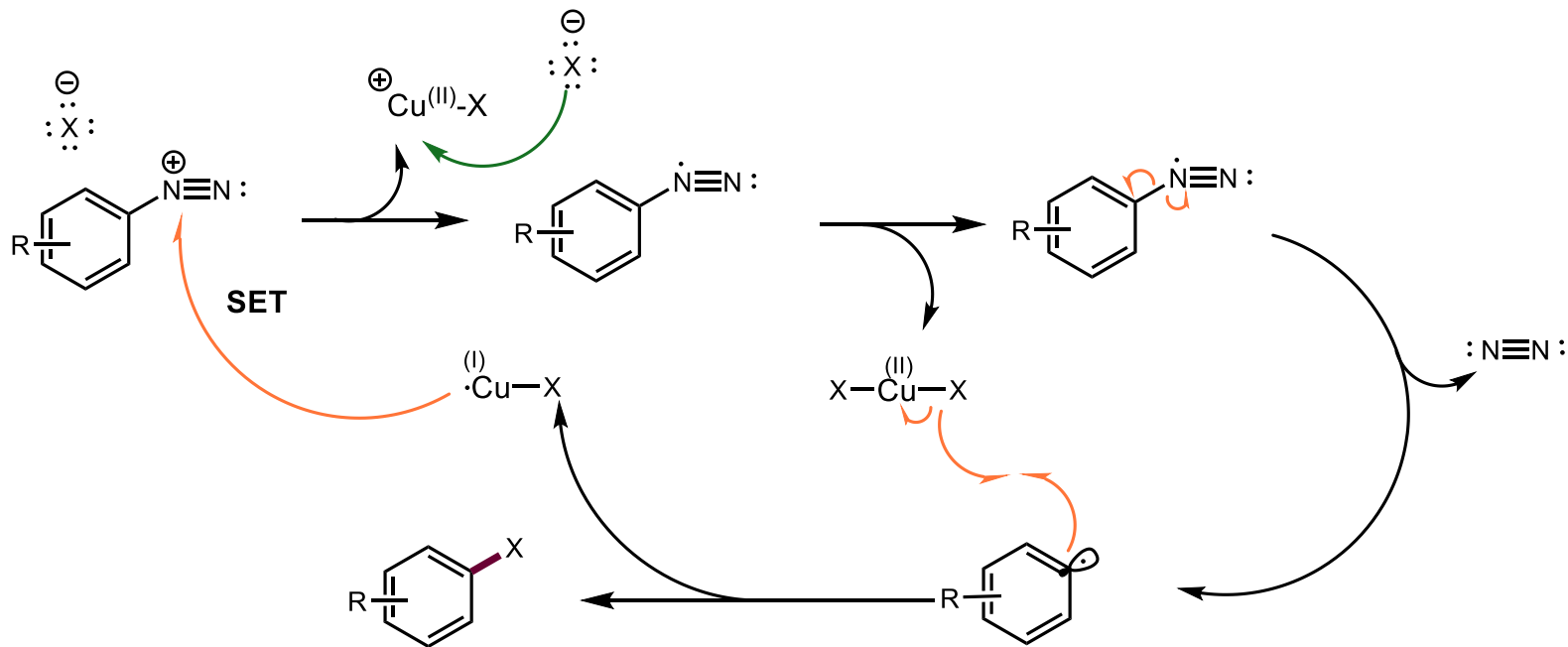


## ■ Features:

- 1): apply to: chlorination, bromination and cyanation
- 2): one pot reaction
- 3): the counterion of the Cu(I) should have to match the conjugate base of the HX
- 4): tolerance: R = H, alkyl, aryl, EWG, or EDG

# Sandmeyer Reaction

## Mechanism

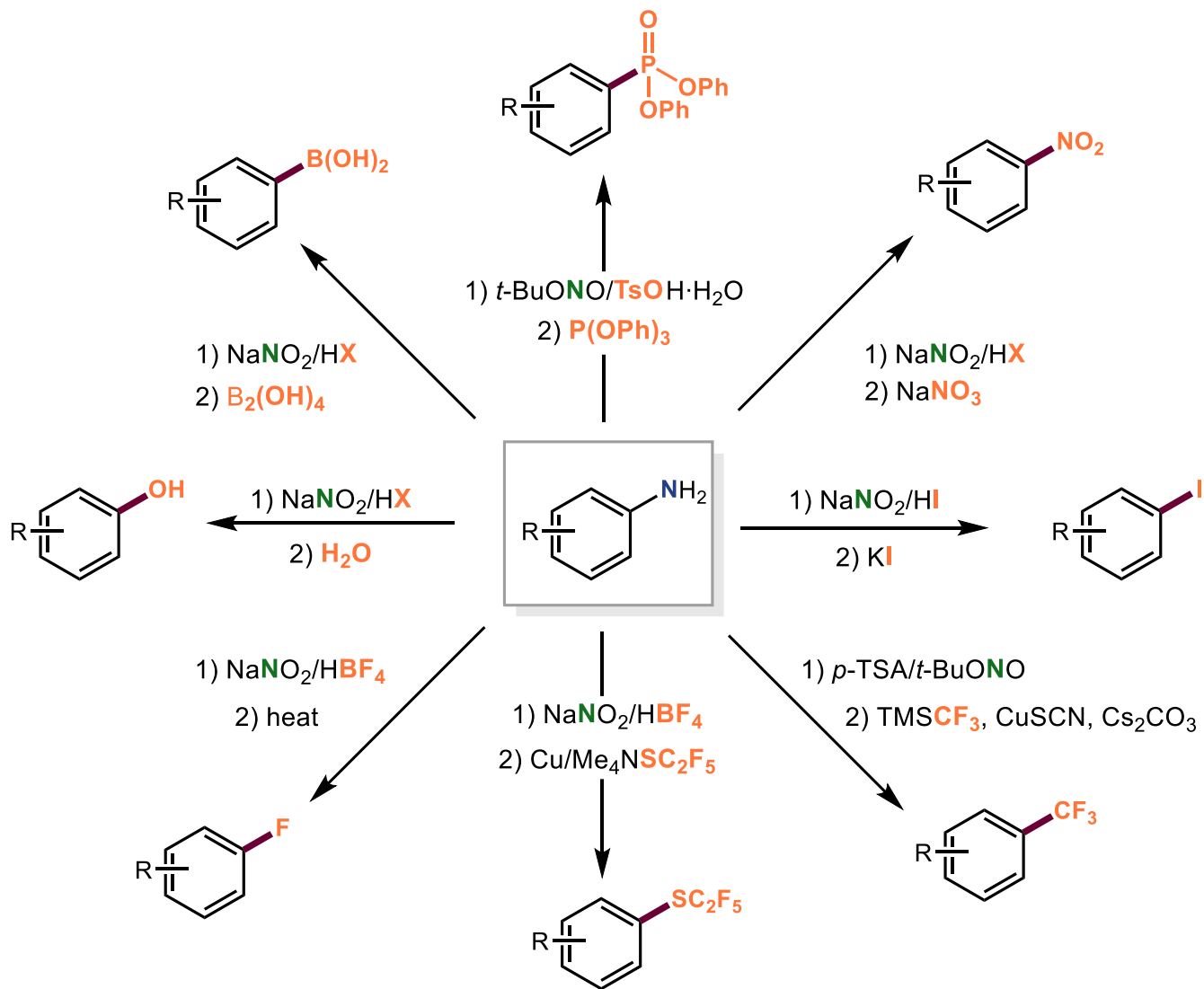


R = H, alky, Aryl, EWG, and EDG

Waters, W.A. *J. Chem.Soc., Abstracts* **1942**, 17, 266-270.

Kochi, J. K. T. *J. Am. Chem. Soc.* **1957**, 79, 2942-2948.

# Sandmeyer Type Reaction



Phosphorylation: Wang, J. *Acc. Chem. Res.*, **2018**, 51, 496–506.

Nitration: Opgenorth, H. J., *Liebigs Ann. Chem.*, **1974**, 1333-1347.

Iodination: Krasnokutskaya, E. A., *Synthesis.*, **2007**, 81- 84.

Trifluoromethylation: Goossen, L. J. *Adv. Synth. Catal.*, **2014**, 356, 2348-2348.

Pentafluoroethylthiolation: Goossen, L. J. *Org. Chem. Front.*, **2016**, 3, 949–952.

Fluorination: Laali, K. K., *Flourine Chem.*, **2001**, 107, 31-34.

Hydroxylation: Hanson, P., *Org. Biomol. Chem.*, **2004**, 2, 1838-1855.

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