

Method for controlled modification of aryl-tetrazine

Direct functionalization by catalysis/ halogenation/ photo-physics/ electrochemistry/coordination chemistry/ synthesis process



BACKDROP

In the last decade, the interest for the chemistry of Tetrazine has been growing due to their unique physicochemical properties. Tetrazines are used in various domains (chemistry, biology, explosives, material sciences, natural products synthesis, etc.), but efficient methods for their functionalization and modification are scarce and limited in scope.

DESCRIPTION

The proposed invention consists in the direct functionalization of *s*-aryltetrazines by catalysis for the introduction of useful groups such as halides (I, Br, Cl, F) or acetate. Introducing halide atoms on the aryl rings is a first step for the extent of π -conjugation length, and the development of more sophisticated molecules.

The invention allows to produce highly substituted *s*-aryltetrazines in a more efficient and practical manner. This innovation paves the way for the development of innovative applications linked to polyaromatics, biphenyls and variously-functionalized Tetrazine derivatives.

COMPETITIVE ADVANTAGES

- Fast, nontoxic, economic access to Tetrazine halides not accessible by the existing process (Pinner hydrazine path)
- High productivity gains
- New products development allowed : halogenation allows to develop a large scope of diverse molecules
- Quick and selective reactions : 10 to 40 min



Markets & Applications

- ❖ Agrochemicals, fruits acaricidal, larvicidal, ovicidal: **Clofentezine** class
- ❖ *ortho*-Functionalized building blocks
- ❖ Fast Bioconjugaison
- ❖ Long-live fluorophores
- ❖ Chemistry of explosives
- ❖ Photovoltaics and organic Materials



Development Stage

The synthetic process was validated at laboratory scale. The process allows to prepare a large class of polyhalogenated tetrazines.

Maturity Level: TRL 4



Research Team

UMR CNRS 6302 – Institute of Molecular Chemistry at the University of Burgundy – ICMUB (Université de Bourgogne)



Intellectual Property

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Target partnership

Patent license

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