
Fact Sheet

Project Information

BROCA

Grant agreement ID: 101059542

DOI
10.3030/101059542

Funded under
Marie Skłodowska-Curie Actions (MSCA)

Total cost
€ 0,00

EU contribution
€ 173 847,36

Coordinated by
RHEINISCH-WESTFAELISCHE
TECHNISCHE HOCHSCHULE
AACHEN

Germany

Start date
1 September 2023

End date
31 August 2025

Project terminated on 14 June 2023

Objective

Boron-containing small organic molecules are fundamental building-blocks in synthetic chemistry due to their use in the Nobel Prize-winning Suzuki cross-coupling. The invention of novel chemical reactions that form carbon–boron bonds in unprecedented ways is of strategic importance to facilitate the discovery, evolution and manufacture of molecules that impact our society.

The overarching aim of this project is to explore a conceptually novel approach
where sp3 carbon–boron bonds are assembled through the reactivity of B-centred radicals (boryl radicals).

Here we propose to develop unprecedented multicomponent reactions based on the photocatalytic generation of boryl radicals from homo-allylic amine-boranes, followed by their cyclization and then diversification through a final reaction with a broad range of trapping agents. This novel synthetic approach will provide a novel class of borylated building blocks that have not been prepared before and we will study their application in metal-catalysed cross-couplings. This methodology will be applied to streamline the preparation of difficult-to-make drug analogues.

The proposal capitalizes on recent developments of the host group that pioneered the use of amine-boranes in photoredox catalysis for boryl radical generation and utilization.

The development of this innovative project at RWTH Aachen will create new tools in bio-organic chemistry and facilitate the preparation of high-value materials. Its implementation will be facilitated by generating, transferring, sharing and disseminating knowledge, and will enhance my future career following the training plan envisioned.

**Fields of science**

natural sciences > chemical sciences > catalysis > photocatalysis

natural sciences > chemical sciences > inorganic chemistry > metalloids

**Keywords**

boryl radicals  photocatalysis  borylation  cross-coupling  amine-boranes  radical cascade

**Programme(s)**

HORIZON.1.2 - Marie Skłodowska-Curie Actions (MSCA)  MAIN PROGRAMME

**Topic(s)**
Call for proposal

HORIZON-MSCA-2021-PF-01

See other projects for this call

Funding Scheme

HORIZON-TMA-MSCA-PF-EF - HORIZON TMA MSCA Postdoctoral Fellowships - European Fellowships

Coordinator

RHEINISCH-WESTFAELISCHE TECHNISCHE HOCHSCHULE AACHEN

Net EU contribution

€ 173 847,36

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Region

Nordrhein-Westfalen > Köln > Städteregion Aachen

Links

Contact the organisation Website
Participation in EU R&I programmes HORIZON collaboration network

Other funding

€ 0,00

EC signature date 31 May 2022
Last update: 2 August 2022

Permalink: https://cordis.europa.eu/project/id/101059542