

SUSTAINABLE CARBONACEOUS MATERIALS CONTAINING TEMPO STABLE FREE RADICAL

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We developed a general, green and one step scalable incorporation protocol of 4-amino-TEMPO onto/into sustainable hydrothermal carbonaceous (HC) matrix. The synthetic pathway confirmed for the 4-amino-TEMPO and sucrose pair allows the configuration of benign, robust, stable redox active blackberry-like (Figure 1) or spherical hydrochar materials, and unveil the power of HCs as an active scaffold for materials used for diverse electrochemical purposes.

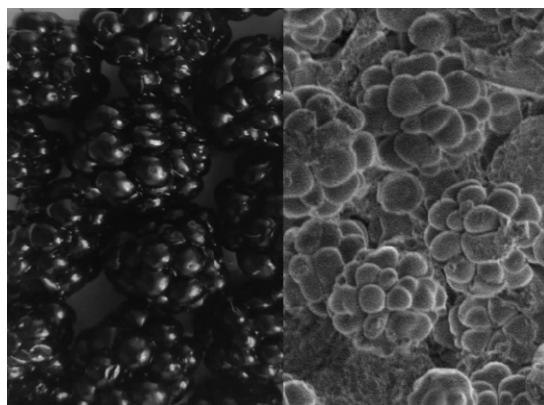


Figure 1. Blackberries image (left) vs. Blackberry-like hydrochars SEM micrograph (right)

The presence, nature and interactions with the microenvironment of TEMPO radical were evaluated by EPR, being also supported by infrared, elemental, thermal, and XPS analysis. The cyclic voltammetry and galvanostatic charge-discharge measurements evidenced enhancements in both electrocatalytic activity and capacitive features for the blackberry-like material [1].

Acknowledgement: This work was supported by a UEFISCDI Research Project Number PN-III-P4-ID-PCE2020-2324.

[1] G. Patrinoiu, J.M. Calderon Moreno, S. Somacescu, A.M. Musuc, T. Spataru, P. Ionita, O. Carp, *ChemSusChem* **2021**, 14(9), 2042-2049.