



“Gheorghe Asachi” Technical University of Iasi, Romania



---

## ELECTROCHEMICAL PROPERTIES OF FLUORINATED HYDRAZINO-PYRAZOLES IN [BMIM<sup>+</sup>][BF<sub>4</sub><sup>-</sup>] IONIC LIQUID

Liviu-Virgil Costea<sup>1\*</sup>, Günter Faflek<sup>2</sup>, Hermann Kronberger<sup>2</sup>

<sup>1</sup>University "Politehnica" Timișoara, Faculty of Industrial Chemistry and Environmental Engineering, Bd. Vasile Pârvan,  
nr. 6, 300223, Timișoara, Romania;

<sup>2</sup>Vienna University of Technology, Faculty of Technical Chemistry, Institute of Chemical Technologies and Analytics,  
Getreidemarkt 9, 1060 Wien, Austria

---

### Abstract

The electrochemical properties of two fluorinated substrates, namely 1H-3-methyl-4-ethoxycarbonyl-5-(4-fluorobenzylidenehydrazino)-pyrazole (Ia) and 1H-3-methyl-4-ethoxycarbonyl-5-(2-fluorobenzylidenehydrazino)-pyrazole (Ib) respectively have been investigated in the room temperature ionic liquid (RTIL) 1-butyl-3-methylimidazolium tetrafluoroborate on a platinum electrode. The voltammetric investigation of the above compounds in the mentioned RTIL shows mainly two irreversible anodic peaks on a wide range of scan rates. Mechanistic studies involving the estimation of the diffusion coefficient, number of transferred electrons in the rate-determining step as well as charge transfer coefficients show that the main aspects of the anodic oxidation of the given substrates follows an EC mechanism which is similar to that observed in molecular solvents leading to the assumption that oxidative ring closure reactions may be conducted in RTILs as well, providing a starting point in finding a new more sustainable method of obtaining the latter compound. The aim of the present work is to extend the current findings gathered previously in order to find a more environmentally friendly and sustainable way of obtaining various pyrazolo-triazoles.

*Key words:* anodic oxidation, ionic liquid, pyrazole, pyrazolo-triazole

*Received:* February, 2014; *Revised final:* August, 2014; *Accepted:* August, 2014

---

---

\* Author to whom all correspondence should be addressed: e-mail: [livius.costea@gmail.com](mailto:livius.costea@gmail.com)