XXVII Congresso Divisione di Chimica Analitica
16-20 Settembre 2018, Bologna

Book of abstracts

www.analitica2018.it
WIDE-SCOPE ENANTIOSELECTIVE VOLTAMMETRY: TESTING INHERENTLY CHIRAL SELECTORS WITH CHIRAL PROBES REPRESENTATIVE OF DIFFERENT STEREOGENIC ELEMENTS

Patrizia R. Mussini1, Serena Arnaboldi2, Sara Grecchi2, Mirko Magni3, Giorgio Tomboni4, Francesco Sannicolo1, Tiziana Benincori1, Simona Rizzo1, Roberto Cicilli4, Heinrich Lang5, Marcus Korb5

1Università degli Studi di Milano, Dipartimento di Chimica, Via Golgi 19, 20133 Milano
2Univ. degli Studi dell’Insubria, Dip. Scienza e Alta Tecnologia, Via Valleggio 11, 22100 Como
3CNR ISTM, Via Golgi 19, 20133 Milano
4Ist. Superiore di Sanità, Dipartimento dei Farmaci Viale Regina Elena 299, 00161 Roma
5Technische Universität Chemnitz, Straße der Nationen 62, 09111 Chemnitz, Germany

Enantioselective electroanalysis is an advanced, attractive target of high potential interest in applicative fields like e.g. the pharmaceutical one. Of course, since specular molecules have the same properties excepting when interacting with a chiral environment, enantiodiscrimination can only be achieved with the electron transfer process taking place at a chiral electrode medium interphase. In this frame, remarkable performances have been recently observed employing selectors endowed with "inherent chirality", i.e. in which chirality and key functional properties originate from the same element. Successful chiral voltammetry tests have been obtained (a) on chiral electrode surfaces based on inherently chiral, electroactive heterocycle-based oligomers, including cyclic ones [1-4] and (b) on achiral electrodes in inherently chiral ionic liquids or achiral ionic liquids with inherently chiral additives [5].

An attractive feature of the above approach is its general validity. In fact, we have observed that a given inherently chiral selector can discriminate the enantiomers of even very different chiral probes (and, symmetrically, the enantiomers of a given probe can be discriminated by different inherently chiral selectors). Moreover, enantiodiscrimination by inherently chiral selectors is being tested with chiral probes representative of different classes of stereogenic elements. A selection of examples will be presented, compared and discussed.

The current support of Fondazione Cariplo/Regione Lombardia "Avviso congiunto per l’incremento dell’attrattività del sistema di ricerca lombardo e della competitività dei ricercatori candidati su strumenti ERC - edizione 2016” (Project 2016-0923) to our inherently chiral research is gratefully acknowledged.