



GEI 2013

ATTI DEL CONVEGNO



Giornate dell'Elettrochimica Italiana
GEI 2013 22 - 27 Settembre 2013, Pavia



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ELECTROSYNTHESIS IN MICROFLUIDIC CELLS: PRELIMINARY INVESTIGATIONS

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The possible utilization of microfluidic reactors in the frame of electro-synthesis presents several advantages including the possibility of avoiding the utilization of the supporting electrolyte, the decrease of the amount of reagents, the easier separation of products.

Recently, it has been shown that in some cases the use of microfluidic reactors in the chemical synthesis field leads to a higher yield, selectivity and purity of the desired compounds [1]. In addition to the advantages mentioned before, it must be highlighted the high portability due to their small size, the best flow control compared to conventional systems, the reduction of time needed to synthesize a product, the decrease of costs for reagents and waste products, and the possibility to perform processes in parallel. As a consequence, the production of chemicals in microreactors has emerged in recent years as very promising branch in the field of chemical and electrochemical engineering [2-5].

In this context, in our lab, two different electrosynthesis processes are currently under investigation: (i) production of chloroacetic acid from di- and tri- chloroacetic acids; (ii) synthesis of carboxylic acids from ketones and carbon dioxide. The study of such processes in both conventional and microfluidic devices will be thoroughly discussed in this contribution.

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