

Venerdì 4 marzo, ore 14:30 (*)

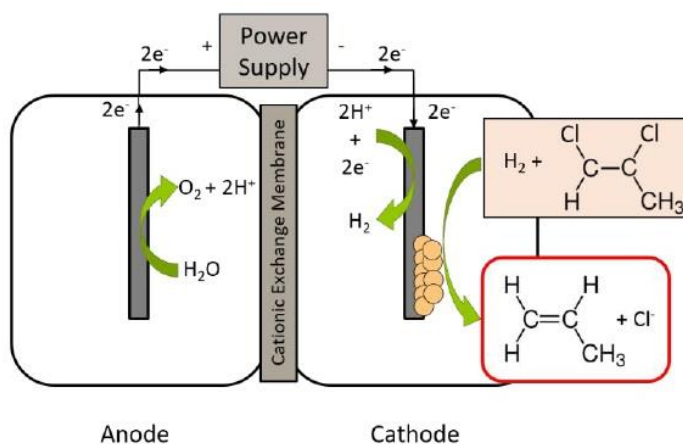
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Degradation of organohalogenated pollutants by the combined application of electrochemical methods and organohalide-respiring bacteria

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Organohalogenated pollutants are usually employed in industrial procedures and can be an environmental concern when they are accidentally spilled to the natural medium and reach groundwater sources. The usual low oxygen concentration in these areas allows to perform an anaerobic bioremediation by employing organohalide-respiring bacteria. One of the bottlenecks for their application is the hydrogen bioavailability in the aquifers, required as electron donor during the biological reduction of the pollutants. This issue can be solved by using bioelectrochemical systems, which can provide electrons to the organohalide-respiring bacteria or directly to the contaminants.

In this study, we successfully performed the abiotic electrochemical degradation of the brominated compounds dibromomethane and 1,2-dibromoethane, and the biologically-mediated degradation of the chlorinated pollutants 1,2-dichloropropane and chloroform. In these degradations, previously enriched anaerobic consortia belonging to the genera *Dehalogenimonas*, *Dehalobacter* and *Dehalobacterium* were employed and completely dehalogenated products were obtained at the end of the operation. The effect of the cathodic potential in the degradation rate and in the coulombic efficiency of the processes was assessed for the degradation of each contaminant. The results obtained show that bioelectrochemical systems are a promising technology in order to work with organohalide-respiring bacteria in the degradation of organohalide pollutants.

Per ulteriori informazioni:

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* Il seminario verrà registrato e reso successivamente disponibile sul sito web dell'Istituto.