

GREEN CHEMISTRY. EDUCATION: ELECTROCHEMISTRY
SUSTAINABILITY AND GREEN ELECTROCHEMISTRY

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The variety of products designed by Chemistry is the base of economy of the developed industrial countries. Trying to protect human health and the environment and also to promote the use of renewable sources we seek for the benefits coming from sustainability and Green Chemistry. Serious benefits from electrochemical activities are: better control, high selectivity, safe operations, mild conditions, and the use of electron as a cheap reagent.

Some important applications of Green Electrochemistry are: •Fuel cells with hydrogen produced by electrolysing water using renewable Aeolian energy, •The hybrid car of future, •The electrochemical production of adiponitrile, •The electrochemical ozone production used as disinfectant, •The electrochemical procedure in the waste management by using improved electrochemical elements, •The co-production of Phthalide and t-butylbenzaldehyde, •The electrolysis of thianthrene in the presence of ketones, •The electrolysis of bisulfide salts, •The synthesis of organic carbamates with superoxide and CO₂, •The synthesis of methanol in supercritical CO₂ with directly electrochemical reduction of CO₂, •The electrochemical synthesis of L-cysteic acid and L-cysteine in one step by using L-cystine, •The alternative electrochemical composition of p-methoxybenzaldehyde from p-methoxytoluene with less pollution and high Atom Economy (100%), •The Green process for the preparation of electrodes in Pb batteries, •The electrochemical DNA biosensors for the detection of nucleotide sequence overcoming the use of radioactive materials, •The use of electrochemical detectors and bio detectors for environmental analysis (detection of organic pollution, pesticides, phenols, heavy metals and other pollutants), •The ionic liquids in the electrochemical waste treatment, oxidation of organic waste, production of aluminium alloys, electrochemical treatment of radioactive waste.