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# Past and Present Research Systems on Green Chemistry

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## Green Chemistry research to avoid climate change

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Green chemistry premises have promoted since 1991 the need for new chemical products, materials and processes to reduce hazards, using sustainable resources and reducing the release of greenhouse gas emissions (GGE). According to J. Jones more than 20 billion gallons of water and ca. 8 billion pounds of CO<sub>2</sub> dioxide releases are avoided each year due to green chemistry innovations, i.e. cold water detergents, house paints that reduce harmful emissions and water, plastics prepared with CO<sub>2</sub> that decrease the use of petroleum resources, etc.,. The projects developed in our group have helped companies to convert their wastes into materials and/or substances useful for themselves or others, closing cycles of obvious benefits, avoiding the use of toxic substances and achieving maximum reduction of energy expenditure, i.e. by using renewable ways of activation. Some examples are a conversion of liquid wastes to fine chemicals and biohydrogen, catalysts for environmental protection and/or for own wastes valorization, biomaterials for regenerative medicine, immobilization of enzymes for biocatalytic processes or cleaner detergents.

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