

ELECTROCHEMICAL REGENERATION OF ACTIVATED CARBONS VERSUS THERMAL REGENERATION

P PATENTED TECHNOLOGY

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CONTACT DETAILS:

Research Results Transfer Office-OTRI
University of Alicante
Tel.: +34 96 590 99 59
Email: areaempresas@ua.es
<http://innoua.ua.es>

ABSTRACT

The research group Electrocatalysis and Polymer Electrochemistry of the University of Alicante has developed a new technology in order to regenerate activated carbons. The main advantages of this technology are: it can be used in situ and at room temperature and pressure.

This technology can be used in the following industrial sectors: pharmaceutical, waste recycling, drinking water, etc.

The research group is looking for companies interested in this technology for licensing agreement or technical cooperation.

ADVANTAGES AND INNOVATIVE ASPECTS

MAIN ADVANTAGES OF THE TECHNOLOGY

- Allows regeneration of activated carbon **in the same place** where it is being used (in-situ regeneration), avoiding removal and transport activated carbon.
- The **equipment** used is **simple** (requires no additional handling or transport of chemicals), and provides a very **economical process** and **easy control**.
- It works at **room temperature** and **atmospheric pressure**, unlike the heat treatment, which uses temperatures between 600-1000 °C, and oxidizing or inert gases.
- The treatment **can be stopped in seconds**, controlling the regeneration process at different time scales.
- The regeneration **efficiency is very high (85-90%)**.
- The **energy consumption is lower than in thermal regeneration**. For example, electrochemical regeneration of activated carbon saturated with phenol has an efficiency of 85%, takes place between 2-3 hours and consumes between 0.20-1.80 Wh/kg respect thermal regeneration, which consumes between 2-2.5 Wh/kg to obtain a similar efficiency (this energy consumption is "on the scale of kilos").
- The **textural properties** of the original material **are slightly modified**.
- It enables not only activated carbon regeneration, but also to enhance the performance of adsorption process **increasing the adsorption capacity** of the porous material and the rate of adsorption.

INNOVATIVE ASPECTS

- Electrochemical technology enhances performance in many aspects of currently technologies (thermal regeneration), as already described above. It is characterized by a **high efficiency, sustainability** and **more economical** than conventional technologies.
- It is therefore a real promising alternative that offers a **great business opportunity** in the growing market of activated carbon regeneration.

MARKET APPLICATIONS

• MEDICAL/HEALTH RELATED:

Other Medical/Health Related.

• INDUSTRIAL PRODUCTS:

Chemicals and Materials.

Pollution and Recycling Related.

• OTHER:

Utilities and Related Firms.

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COLLABORATION SOUGHT

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