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Electro-Coagulation: A Step towards Chemical-Free Water Treatment.

Tito, Duarte Novaes
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Electro-Coagulation: a step towards chemical-free water treatment

D. Tito, P. Krystynik, P. Kluson

Institute of Chemical Process Fundamentals, Academy of Sciences of the Czech Republic,
Rozvojova 135/1, 165 02 Prague 6, Czech Republic, Tel: +420 220390149; email:
tito@icpf.cas.cz.

There is a well established need for more efficient and effective technologies to deal with contamination in wastewater treatment. The challenges result not only from a greater amount and a larger variety of contaminants appearing in effluent streams but also novel contaminants (e.g. EDC's) that show relevant activity at trace levels (ppb), requiring new treatment processes.

Precipitation followed by physical separation is a strategy often used to remove a broad range of contaminants from solution through a process called coagulation. Although this is typically carried out by chemical precipitation, an electrochemical alternative is possible which can reduce chemical usage and footprint: the process is called electro-coagulation. This controlled corrosion process has the potential to substantially reduce the amount of chemicals used in chemical coagulation and offers the capability of taking basic wastewater treatment to remote locations, this way improving health but also tackling pollution at source.

As a result of this great potential, this technique has received substantial attention over the past decade but gaps in the understanding of the principles still exist and ambiguity in reporting of results can be found in the literature. This work will focus on presenting the principles of electro-coagulation, clarifying what are the key process parameters and demonstrating the applicability of the technology by showcasing large-scale case studies and process performance data.