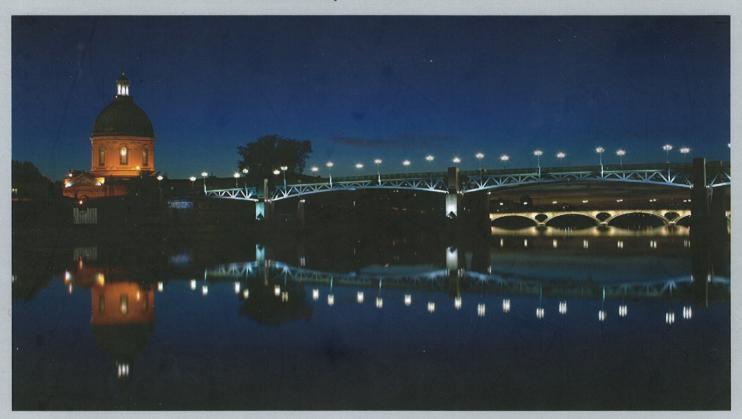
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By application of PEF treatment with very low enance an equilibrium of dead and live cells can be reached. The factors related to PCD are then inhibited and the sical response after PEF treatment investigated.

0-087

active compounds from brewer's and baker's

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Yeasts are rich in proteins, vitamins, antioxidants and biologically active compounds. The main problem their utilization as a source of proteins for human food indigestible cell wall and the high nucleic acid con-In the present study, we evaluated the applicabilof PEF treatment for production of protein extracts ther biologically active compounds from commerpressed backer's yeast, and dry and spent brewer's The cells were treated with monopolar rectangupulses using a continuous flow system (flow rates up 130 ml/min). The release of macromolecules and low ecular weight components depends on the percentage reversibly permeabilized cells. The incubation of elecpermeabilized cells in water leads to liberation of small \sim cules only - 95 % of the free amino acids and low ecular UV absorbing components; 80 % of water solwitamins, 50 % of the total antioxidant activity and phenols. The release of macromolecules (proteins and eleic acids), takes place only after dilution and incubof the permeabilized cells in a buffer with a suitpH. Maximal yield (90 % of total soluble protein) obtained when over 95% of the cells were irreversibly meabilzied. At these conditions the outlet temperatfor backer's yeast was in the range of 46–49oC, and for wer's yeast 44–46oC. No protein denaturation occurred rerified by enzyme activity measurements. Postpulse bation at 30oC in presence of Dithiothreitol (1-2 mM) manced significantly the rate of protein liberation. The entein concentrates, obtained by ultrafiltration showed reduced nucleic acid (NA) content (protein/NA ratio -100/4). This is due first to the retention of a part of NA side the cell, and to a NA hydrolysis during postpulse mubation.

20-088

extraction from microalgae by nanosecond sulse electric field induced underwater shock aves

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warming that recently considers as a major problem world. Biofuel production as a sustainable source energy is considered as promising complements troleum in order to prevent environmental problems.

In this regard, microalgae can be one of the best options since other plant resources may be used for human consumption, using them for producing biofuel may cause an increase in their price. However, there are several challenges to extract oil from microalgae, e.g., high energy consumption, chemical solvents, and algae culture destruction; which should be addressed by new approaches. This study suggests two pulsed power based physical methods for hydrocarbon extraction from microalgae: nanosecond pulse electric fields (nsPEF) and their induced underwater shock waves. Botryococcus braunii with high hydrocarbon production potential was used as microalga model. For nanosecond pulse electric fields experiments, 20 to 87 kV/cm electric fields with 80 to 200 ns pulse duration, with different pulse repetition frequencies and pulse numbers were applied. Underwater shock waves experiments were conducted by applying up to 1000 shock waves, generated by nanosecond pulse electric discharge in water. Fluorescence microscopic observation and image and chemical assesments were performed for analysing the samples, understanding the extraction mechanisms, and comparing the outcomes. According to the results, both pusled power approaches can be used as high efficincy physical methods for extracting oil from Botryococcus braunii.

PO-089

Enhancement of antibacterial effect of plasma activated water with pulsed electric field

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Transient Spark discharge with nanosecond high energy pulses generates a cold plasma operated in atmospheric air with water electrospray and demonstrated strong and fast antimicrobial effects when bacteria are directly exposed to the discharge. Transient spark can also activate water which keeps its antibacterial properties for a few hours after plasma treatment. However, the antibacterial effects are weaker than in the direct exposure. Short and long lifetime reactive species, electrons, UV, heating and electric field generated by the plasma are good candidates to explain this difference but their respective importance and the coupled effects between them are not well understood. Our preliminary experiments are focused to understand the role of strong pulsed electric fields in the overall plasma action to bacterial cells and the effect of electroporation induced by high electric field in combination with chemical effects of the plasma activated water.

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PO-090

Synergy effects of pulsed electric fields during the process of cryoconcentration

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