Microalgae – the golden crop

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Autotrophic microalgae carry out the photosynthetic conversion from light into organic compounds. Microalgal cultivation brings environmental advantages, highlighting the capability of nutrient recycling from wastewater combined with CO_2 fixation from flue gases towards a wide range of 3G biofuels and bioproducts.
These microorganisms have been widely recognized as having huge potential as feedstock for food and feed industries, as "nutraceutical" agents (carotenoids, antioxidants, polyunsaturated fatty acids, single-cell proteins (SCP), phycobiliproteins, polysaccharides, vitamins, phytosterols, minerals), for the cosmetic industry, bioplastics, agriculture biofertilizers and more recently as an energetic vector towards the production of a wide range of biofuels.
Microalgae exhibit clear advantages when compared with higher plants, such having a higher photosynthetic efficiency, higher areal biomass productivities, higher CO_2 biofixation rates from flue gases emitting plants and higher O_2 production rates, non-competition for agricultural areas (marginal lands such as deserts, rocky areas and salt pans can be used), non-competition for drinking waters (saltwater, brackish water and wastewaters can be used), harvesting routines can be carried out daily lowering storage costs.

The presentation highlight the LNEG's experience of the microalgae's potential to several industry sectors emphasizing the production of food, feed, biofuels, bioproducts, bioplastics and biofertilizers within the biorefinery concept.
Several microalgal-based biorefineries from a wide range of wastewaters to a wide range of products will be shown. Especial emphasis will be dedicated to the Brewery wastewater treatment-based *Scenedesmus obliquus*, and from the obtained biomass, the production of biofuels (hydrogen, biogas, bio-oil and biochar) through biochemical and thermochemical technologies, respectively, bioactive compounds (phenols and flavonoids) through subcritical water extraction (with a positive impact on destruction of photogenes and toxins that could potentially be present) and the stimulating effect of the biomass on germination/growth of seeds.
Joint projects will be also underlined.

Some related References….e.g., In the field of Microalgae for:

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