

## Oral or Poster Presentation

# Continuous airlift fermentation – a new microalgae production technology

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### ABSTRACT

It took nearly 10 years from a simple idea until a new industrial site.

The founders of Bioréa wanted to stop importing chlorella from halfway around the world and improve their environmental footprint. Focusing on fermentation technics, they began to design a rough sketch based on airlift principles: compressed gas is used for aeration and agitation instead of stirring impellers. The team met several difficulties scaling-up the process from few liters up to 300-600-2000 litres. Almost 6 years of test&learn were required to overcome the challenges of thermodynamics, foam, evaporation, level variation, homogeneous agitation, orientation of metabolism. Finally, Bioréa managed to design and patent an innovative airlift fermentation technology with efficient batch, fed-batch and continuous processes. This technology is especially well adapted to heterotrophic microalgae and the productivity is very high. This scale-up challenge reached the goal of the setting up of new factory allowing cultivation of microalgae strains with high concentration. Eg. Chlorella Sp. production reaches  $1.10^{10}$  cell/ml and 50-70g/l of algal dry matter with optimal land-use, high energy efficiency as well as sustainable water management, thus achieving original targets of global footprint.

Keywords: Fermentation, Airlift, scale-up, microalgae, heterotrophy

References:

### BIOGRAPHY



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1. 15 years of business development in food ingredients led me to the biotechnologies and its applications. The focus on fermentation & microalgae abounds with enough possibilities and projects for a lifetime. Looking for new opportunities for both you and Bioréa is an amazing challenge.
2. Bioréa relies on its innovative & patented airlift fermentation technology to offer biomass (microalgae, yeast, bacteria), tailor-made fermentation services (CMO) from pilots “for your projects” until industrial production “for your business” and finally, Bioréa designs airlift benchtop bioreactors for your R&D lab – *CiYOU Cultivate it Yourself*

