



EUALGAE



NEWSLETTER #2

May, 2016

Second Working Group Meeting in Madrid

The second **Working Group** (WG) meeting of the **EUAlgae** COST Action was held in the premises of IMDEA Energy (Grant Holder) on 3rd February 2016.

46 researchers from 20 countries participated in the event. Local support for the organization of this meeting was provided by **IMDEA Energy**.

The participants had the opportunity to meet new Action participants and to visit the installations of the host institution. Several european calls were identified for collaboration further between the participating research groups and the website of the Actions was presented.



First Workshop of Algae Bioproducts for Early Career Investigators



On 4th April 2016, Valladolid University (Spain) organized the "1st **EUAlgae** Workshop of Algae Bioproducts for Early Career Investigators" within the framework of the **EUAlgae** COST Action. 18 young researchers from 11 countries attended the event.

Short Term Scientific Missions

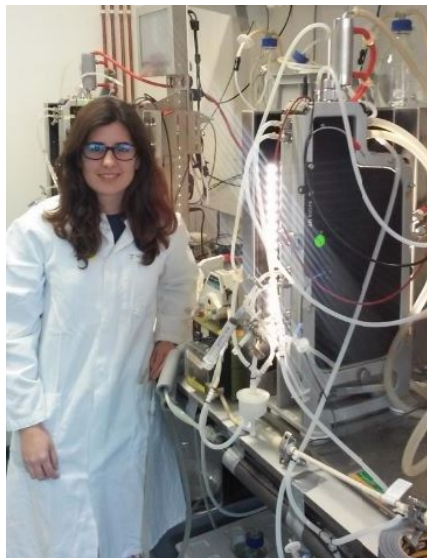


During the First Grant Period of the **EUAlgae** Action six young researchers have been approved for a grant for a **Short Term Scientific Mission** (STSM). Denmark, Spain, Turkey, Romania, as origin countries, and Iceland, Netherlands & Spain, as host countries, were involved in this STSMs.

Further information on the ongoing calls can be found in the Action's website.

Short Term Scientific Missions - The Experience of the Researcher

APPLICATION OF MILKING PROCESS IN THE *BOTRYOCOCCUS BRAUNII* PRODUCTION



Grantee: Judit Martín, Department of Chemical Engineering and Environmental Technology, University of Valladolid, Mergelina s/n, Valladolid, Spain

Host: María Barbosa, Department of Bioprocess Engineering, WU Agrotechnology and Food Sciences, Droevendaalsesteeg 4, 6708 PB Wageningen, Netherlands

Duration: 12 January 2016 – 10 April 2016

Experience: The purpose of my short-term scientific mission (STSM) in Wageningen University was the application of milking process in the *Botryococcus braunii* production. It was a great challenge where the extraction of EPS (exo-polysaccharides) from algae was carried out at the same time than the production of microalgae biomass through microfiltration, as a first step. It was necessary to check the cell viability during this process and, of course, to optimise the operational conditions such as the number of milking cycles. We had to take into account during this optimization: the high product recovery and the microalgae production. That allowed me to learn new techniques, focussed on the extraction, that could be possibly applied in other type of microalgae and process.

BIOGAS UPGRADING USING AN ALGAL-BACTERIAL PHOTOBIOREACTOR

Grantee: Ana-Maria Galan, Department of Bioresources, The National Institute for Research and Development in Chemistry and Petrochemistry – ICECHIM, Bucharest.

Host: Raul Muñoz, Department of Chemical Engineering and Environmental Technology, University of Valladolid, Mergelina s/n, Valladolid, Spain.



Duration: 29 February 2016 – 13 March 2016

Experience: The purpose of my STSM at University of Valladolid was the application of a microalgal-bacterial process for biogas upgrading. For this purpose, I studied here the operation mode of two systems: 1. A system with an open photobioreactor – a pilot high rate algal pond (HRAP) – with a volume of 180L, connected with an external absorption column with a volume of 2.2 L. This system was used for the removal of CO₂ and H₂S from biogas, and for the treatment of a diluted wastewater centrate. 2. The second system studied here is a system with a closed photobioreactor with a volume of 110L connected to an external absorption column with a capacity of 2 L. This system was used for the removal of CO₂ and H₂S from raw biogas. For both systems a synthetic mixture of 29.5 % CO₂, 0.5 % H₂S and 70% CH₄ was used as raw biogas. To evaluate the performance of both systems, the following parameters were monitored: the composition of the raw biogas and upgraded biogas, the TOC, IC, TN, NH₄⁺, NO₂⁻, NO₃⁻, P, and TSS in the influent and in the culture broth. The temperature, pH and DO in the cultivation broth, and the flow rate of the influent, the raw biogas and upgraded biogas were also measured.

This STSM allowed me to learn how to operate and how to monitor a system for biogas upgrading. Here, I learned techniques that could be applied in our laboratories in Bucharest.

SUPERCRITICAL CO₂ EXTRACTION OF HYDROCARBONS FROM *B. BRAUNII* WITH AN EMPHASIS ON CELL VIABILITY

Grantee: Ece Yildiz Ozturk, Bioengineering Department, Ege University, Izmir, Turkey

Host: Dr. Dorinde Kleinegris, Department of Bioprocess Engineering, WU Agrotechnology and Food Sciences, Droevendaalsesteeg 4, 6708 PB Wageningen, Netherlands

Duration: 1 March 2016 – 30 March 2016

Experience: I was very delighted to find the opportunity to spend one month working on the high pressure hastelloy vessel system at Food & Biobased Research in Wageningen UR. This gave me a chance to deepen my knowledge related to down-stream processes in the inspiring, creative environment of one of the largest Netherland universities. COST Action ES1408 programme was a great opportunity to enrich my future studies and contribute to my academic development. Within the scope of the STSM, supercritical CO₂ extractions of hydrocarbons from lyophilized and fresh biomass of *Botryococcus braunii* by using a Hastelloy vessel were carried out. The hastelloy vessel is capable of supercritical CO₂ extraction of both fresh algal broth and lyophilized biomass. This specification is additional to the equipment that has been used for the SC-CO₂ extraction of hydrocarbons out of algae in Turkey. Besides, quantitative detection of hydrocarbons in algae extracts was executed by gas chromatography. Supercritical CO₂ extraction conditions that enable maximum hydrocarbon recovery were determined. In addition, the effect of high pressure on cell viability was investigated by methylene blue analysis and via microscopic images. Also, reusability of algal culture after extraction was investigated in modified CHU 13 liquid media under climate room conditions.



Outreach Activities

❖ 3º Simpósio Brasileiro do Potencial Energético das Microalgas - 16 - 18 November 2015 (Natal-RN, Brasil)



Dr Luisa Gouveia (Vice Chair) from LNEG (Portugal), participated in the 3º Simpósio Brasileiro do Potencial Energético das Microalgas held in Natal, Brasil. She presented the objectives and the structure of the **EUAlgae** Action to the international participants of the Symposium devoted to the microalgae.



Publications

❖ EUALGAE: Microalgae proteins and ingredients

Author: Dr. Maria Hayes (WG3 Leader), Teagasc Food Research Centre, Ashtown

Publication: TResearch, Volume 11: Number 1. Spring 2016, 32-33

[Direct link](#)

❖ **Capturing biodiversity: linking a cyanobacteria culture collection to the “scratchpads” virtual research environment enhances biodiversity knowledge**

Authors: Dr Spyros Gkelis (MC Member), Dr Manthos Panou

Publication: Biodiversity Data Journal 4: e7965

Published: 06 Apr 2016 (Open-Access)

[Direct link](#)

❖ **Microalgae biomass production using wastewater: treatment and costs. Scale-up considerations.**

Authors: Gouveia, L. (Vice-Chair); Graça, S.; Sousa, C.; Ambrosano, L.; Ribeiro, B.; Botrel E.P.; Neto, P.C.; **Ferreira, Ana F. (WG Member); Silva, CM (WG Member).**

Publication: Algal Research 16, 167–176.

doi: 10.1016/j.algal.2016.03.010

❖ **Microalga Nannochloropsis sp. biomass for biodiesel production: conventional (cell disruption) and in situ transesterification.**

Authors: Gouveia, L. (Vice-Chair); Janelas, J.; Torpecelo, A.; Oliveira, A.C.

Publication: Journal of Marine Biology & Oceanography in press (2016).

Related research calls that might be of interest for EUAlgae members

Conference calls

❖ **Meeting of the TREBOUXIA-WORKING group**

- 26 - 28 September 2016 - Trieste, Italy
- Registration:
 - 31st May 2016** - Registration deadline (no congress fee);
 - 30th June 2016** - Abstracts deadline
- Registration for the meeting: email to lmuggia@units.it
- More information [here](#).



The data contained in this newsletter has been provided by the **EUAlgae** members. For further information and collaboration in the next Newsletter you can contact the **Dissemination Manager** Dr Raul Muñoz at mutora@iq.uva.es.