EuroBioRef

Project acronym:
Project Title: EUROpean multilevel integrated BIOREFinery design for sustainable biomass processing
Instrument: Large Scale Collaborative Project
Thematic Priority: FP7-ENERGY.2009.3.3.1
Grant Agreement: 241718
Start Date of Project: 01/03/10
Duration: 48 Months

SP10 – Exploitation, dissemination, communication, standardisation and training
WP10.3 – Training

Deliverable report

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Deliverable Identification	
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Deliverable Title:	New modern training and education preparation matters for courses for students
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Contributing Beneficiaries:	CIRCC, CERTH
To be Submitted to the EC:	No

History			
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Approvals				
	Name	**Organization**	**Date**	**Visa**
Deliverable Responsible	Michele ARESTA	CIRCC	26/9/2012	OK
Work Package Leader	Angeliki Lemonidou	CERTH	27/9/2012	OK
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Coordinator	Franck DUMEIGNIL	CNRS-UCCS	02/10/2012	OK
Exploitation Manager	Jean-Luc DUBOIS	ARKEMA	02/10/2012	OK

Dissemination level		
PU	Public	X
PP	Restricted to other programme participants (including the Commission Services)	
RE	Restricted to a group specified by the consortium (including the Commission Services)	
CO	Confidential, only for members of the consortium (including the Commission Services)	

CONTENT

Executive summary

Description of the deliverable objective and content

The objective of this document “D10.3.2” is to present the tools developed for the training of university students. In the Annexes the documents developed are reported.

Deviation from objectives and corrective actions

This deliverable was a little delayed with respect to M28 as we were waiting for the publication of the Book on “Biorefinery: from Biomass to Chemicals and Fuels” that occurred on August 15, 2012.

SECTION I - Activities performed

The tools developed for the training of university students within EuroBioRef consist of the following:

- New training courses, prepared based on new knowledge developed within the project, and which are presented to University students or MSc and PhD programmes. The courses developed so far in the frame of EuroBioRef are listed in Annex I.

- Organization of a dedicated summer school aiming at the effective training of students on the most up-to-date scientific and technological aspects of biorefineries. The first event took place on the 18-24th September 2011, in Castro-Apulia in Italy, with great success. Students from non-Eurobioref partner institutions were the majority of the participants, and teachers from Eurobioref and non-Eurobioref institutions delivered lectures. Students presented posters on research work related to Biorefinery and several of them received an award for the quality of science and clarity of presentation. A book containing the lectures delivered at the school was prepared and was published by De Gruyter in August 2012 (Annex II and III)

  - Assessment of the training sessions by delivering a survey to the participants so as to
    * assess the added value of such an event in compliance with the EC requirement of knowledge dissemination
    * find out how participants rate the efforts of the organizing committee in terms of form and content
    * learn from participants' feedback in order to provide an even better knowledge exchange experience. (Annex IV)

- Realization of short term internships, short term visits for training and use of facilities and execution of diploma thesis of university students to the industrial partners of the project. The activities performed so far are shown in Annex V

- Organization of training events and delivery of lectures for university students in the area of biorefineries. Detailed list of events already organized/planned for the future, as well as a list of lectures already delivered can be found in **D10.3.1** (24M periodic report).

- New events have been planned for M30-42 period, on Reactive distillation and Bioeconomics.

ANNEX I - LECTURES IN MASTER COURSES

LECTURES IN MASTER COURSES AT THE UNIVERSITY OF LILLE-FR

1. Franck Dumeignil
'Within the 'Eco-conception : une démarche responsable' course: 'Biomasse, Bioraffineries & Catalyse', Ecole Centrale de Lille, 2nd year students, Villeneuve d'Acsq

2. Franck Dumeignil
'La catalyse au coeur des bioraffineries du futur' 20h of lecture in the master 'CEE' (Chemistry Energy Environment). 16h by Franck Dumeignil, 4h by Andréi Khodakov (September- December 2010)

3. Franck Dumeignil 'Impact des carburants Bilan environnemental des différentes filières énergétiques pour les applications mobiles, amélioration des carburants et biocarburants 'CEE' (Chemistry Energy Environment). 16h. (September-December 2010)

4. Franck Dumeignil
'La catalyse au coeur des bioraffineries du futur' 20h of lecture in the master 'CEE' (Chemistry Energy Environment). 16h by Franck Dumeignil, 4h by Andréi Khodakov (September- December 2011)

5. Franck Dumeignil 'Impact des carburants Bilan environnemental des différentes filières énergétiques pour les applications mobiles, amélioration des carburants et biocarburants 'CEE' (Chemistry Energy Environment). 16h. (September-December 2011) - Version: VF Date: 28/02/2012 Security: PU Page 12/22

6. Sébastien Paul - Processes of Today and Tomorrow, March to May (32h), lecture to 20 second year engineer students of the Ecole Centrale de Lille

LECTURES WITHIN THE CATALYSIS COURSE AT THE UNIVERSITY OF BARI

In this course delivered by M. Aresta (academic year 2010-2011) and A. Dibenedetto (academic year 2011-2012) the concept of biorefinery was illustrated using the standard slides developed within the project plus selected slides from the set of slides presented at the School in Castro.

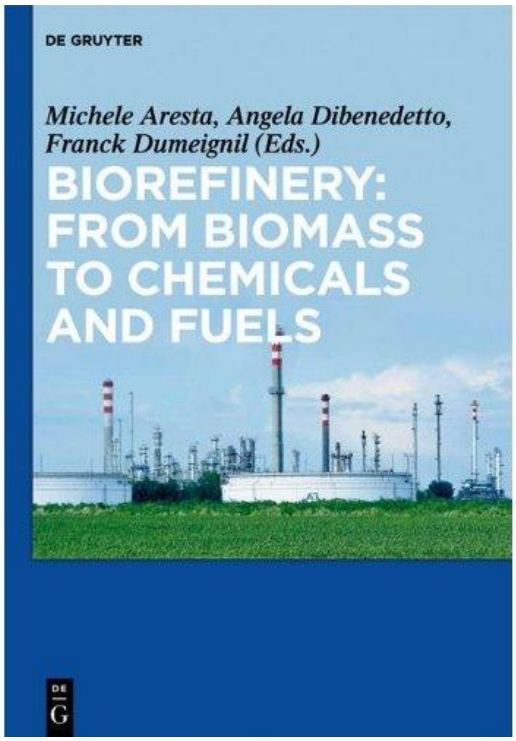
ANNEX II - LECTURES DELIVERED AT THE SUMMER SCHOOL IN CASTRO:

The slides of such lectures can be found on the Eurobioref website and are available for downloading and use for teaching purposes http://www.eurobioref.org/Summer_School/. In addition to the slides, the abstracts of the posters presented by the students during this event can be found at the same internet address. More detailed information on the school can be found in **D10.3.1** (24M periodic report).

ANNEX III - BOOK ON "BIOREFINERY: FROM BIOMASS TO CHEMICALS AND FUELS"

This Book hit the shelves in August 2012.
This book provides an introduction to the basic science and technologies for the conversion of biomass (terrestrial and aquatic) into chemicals and fuels, as well as an overview of innovations in the field. The entire value chain for converting raw materials into platform molecules and their transformation into final products are presented in detail. Both cellulosic and oleaginous biomass are considered. The book contains contributions from both academic scientists and industrial technologists so that each topic combines state-of-the-art scientific knowledge with innovative technologies relevant to chemical industries.
Selected topics include: Refinery of the future: feedstock, processes, products; The terrestrial and aquatic biomass production and properties; Chemical technologies and biotechnologies for the conversion of cellulose, hemicellulose, lignine, algae, residual biomass; Thermal, catalytic and enzymatic conversion of biomass; Production of chemicals, polymeric materials, fuels (biogas, biodiesel, bioethanol, biohydrogen); Policy aspects of biomass product chains LCA applied to the energetic, economic and environmental evaluation of the production of fuels from biomass: ethanol, biooil and biodiesel, biogas, biohydrogen.

The book is a useful tool for presenting the concept of Biorefinery and specific applications.



ANNEX IV - EVALUATION FORMS FOR THE SUMMER SCHOOL

37 out of the 62 people surveyed in total (42 students and 20 teachers) agreed to reply to the survey, which is honourable for a first event of this kind since the launch of EuroBioRef.
Amongst the 37 people who gave their feedback:

- 21 were students (meaning that ≈50% of participating students replied to the survey)
- 16 were teachers (meaning that ≈80% of participating teachers replied to the survey)

Basically, participants were asked how satisfied they were with:

- The **content** of the main presentations:
  Participants found that the presentations were instructive, stimulating and well addressing the topic.

- The **performance** of the speakers:
  Respondents almost unanimously rated as "excellent" the performance of the speakers in terms of expertise, clarity and accuracy of speech and of slides readability.

- The overall **logistics:**
  The vast majority of participants found that the event was well organised, with a good price/quality ratio, excellent punctuality and a substantial information package.

The detailed results of the survey can be found in **D10.3.1** (24M periodic report).

ANNEX V – INTERNSHIPS AND TRAINING VISITS

1. Alexia Cordoba
Training in catalytic tests of Mo and W-based catalysts for the production of methanethiol from syngas/H2S mixture
Partners involved: UCCS-CNRS and Arkema.
Duration: 3 months and 2 weeks (18th April 2011 – 29th July 2011)

2. Training of RWTH Aachen PhD student (organometallic chemistry, catalysis and analytical procedures), in the UCCS CNRS Lille, 3 weeks (07/03/2011-25/03/2011)