6th International Congress
on

GPE

GREEN PROCESS ENGINEERING

BOOK OF ABSTRACTS PROGRAM

Toulouse – FRANCE
3 – 6 June 2018


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Occitanie
Pyrénées - Méditerranée


Université Fédérale
Toulouse Midi-Pyrénées


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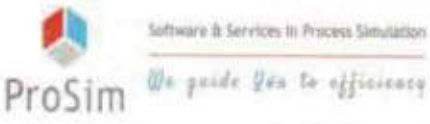
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EUROSCIENCE OPEN FORUM
TOULOUSE

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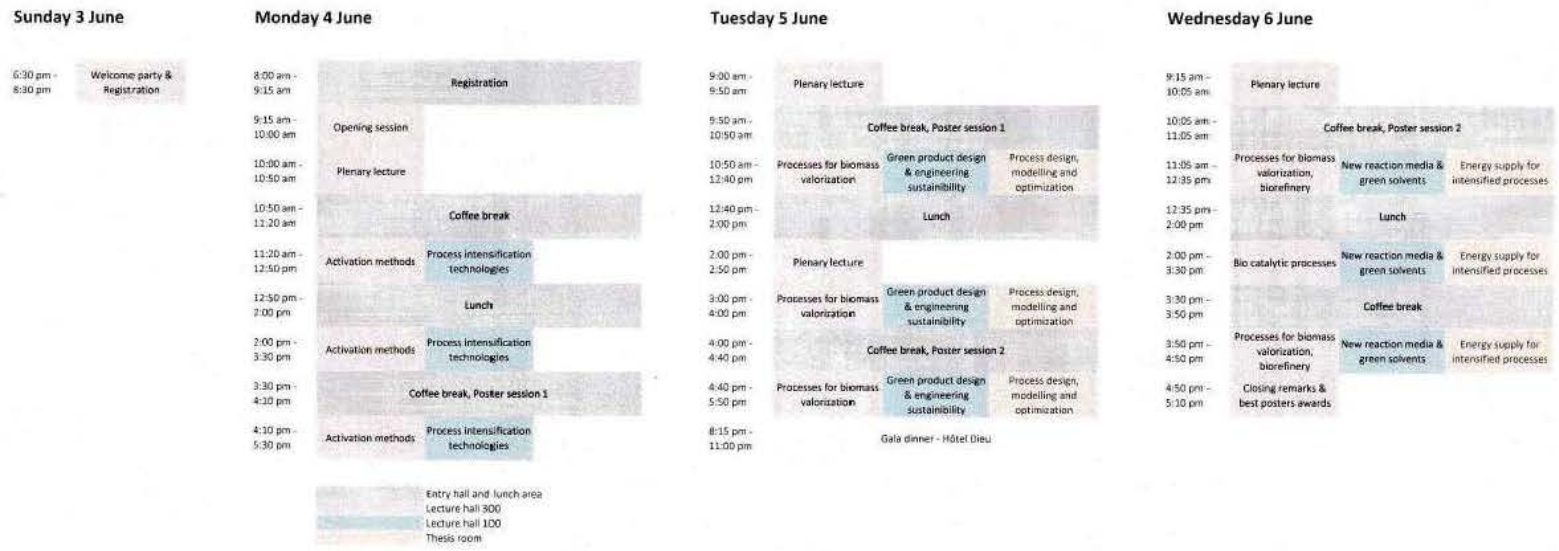

Monday, 04 June 2018

8:00am - 9:15am Registration

9:15am - 10:00am **Opening session**
Lecture Hall 300
Pierre Aimar – Head of Laboratoire de Génie Chimique, Toulouse (France)
Laurent Prat – Head of INP-ENSIACET, Toulouse (France)
Gilbert Casamatta – President of the Institute Research and Technology, Toulouse (France)

10:00am - 10:50am **Plenary lecture**
Lecture Hall 300
ROLAND CLIFT (UK)
Sustainability: Putting the process into context

10:50am - 11:20am **Coffee Break**

11:20am - 12:50pm

ACTIVATION METHODS
Lecture Hall 300
Chair: **Jose Sanchez-Marcano**

11:20am - 11:50am
KEYNOTE / HYPERCROSSLINKED POLYSTYRENE AS A SUPPORT FOR THE SYNTHESIS OF LIGANDLESS CATALYSTS OF SUZUKI CROSS-COUPLING
Nikoshvili, Linda; Nemygina, Nadezhda; Bykov, Alexey; Kivi-Minsker, Lioubov; Sulman, Esther

11:50am - 12:10pm
COMBINED TECHNOLOGY FOR REMOVAL OF PHARMACEUTICALS: CATALYTIC OZONATION OF IBUPROFEN AND DICLOFENAC
Saeid, Soudabeh; Tolvanen, Pasi; Kråkström, Matilda; Kumar, Narendra; Eränen, Kari; Mikkola, Jyri-Pekka; Kronberg, Leif; Eklund, Patrik; Salmi, Tapio

12:10pm - 12:30pm
CO2 VALORIZATION BY A NEW MICROBIOLOGICAL PROCESS
RUIZ VALENCIA, Azariel; BENMEZIANE, Djahida; PEN, Nakry; BONNIOL, Valérie; PETIT, Eddy; BELLEVILLE, Marie Pierre; SANCHEZ-MARCANO, José; PAOLUCCI, Delphine; SOUSSAN, Laurence

12:30pm - 12:50pm
ESTERIFICATION OF OLEIC ACID WITH GLYCEROL OVER A NEWLY HYDROPHOBIC DESIGNED ZIRCONIA SUPPORT HETEROGENEOUS ACID CATALYST
Kong, Pei San; Pérès, Yolande; Cognet, Patrick; Wan Daud, Wan Mohd Ashri; Aroua, Mohamed Kheireddine

PROCESS INTENSIFICATION TECHNOLOGIES
Lecture Hall 100
Chair: **Christophe Gourdon**

11:20am - 11:50am
KEYNOTE / OPERATION OF A MODULAR CONTAINERISED MINIPLANT FOR THE CONVERSION OF PYROLYSIS OIL TO SYNTHETIC GASOLINE
Kolb, Gunther; Jochen, Schuerer; Helmut, Pennemann

11:50am - 12:10pm
PRODUCTION OF STARCH NANOPARTICLES THROUGH SOLVENT-ANTISOLVENT PRECIPITATION IN A SPINNING DISC REACTOR
Sana, Sahr; Boodhoo, Kamelia; Zivkovic, Vladimir

12:10pm - 12:30pm
HYBRID CATALYSIS: STUDY OF A MODEL REACTION FOR ONE-POT REACTOR COMBINING AN ENZYME AND A HETEROGENEOUS CATALYST
Frey, Myriam; Richard, Dominique; Fongarland, Pascal

12:30pm - 12:50pm
TECHNICAL AND ECONOMIC CONSIDERATION OF COUPLING BETWEEN NANOFILTRATION AND OZONATION FOR WASTEWATER REUSE
Mendret, Julie; Azais, Antonin; Brosillon, Stephan

12:50pm - 2:00pm **Lunch**

2:00pm - 3:30pm

ACTIVATION METHODS
Lecture Hall 300
Chair: **Pedro Lozano**

2:00pm - 2:30pm

KEYNOTE / MICROWAVE-ASSISTED CATALYTIC AIR PURIFICATION
Nigar, Hakan; Mallada, Reyes; Santamaria, Jesus

2:30pm - 2:50pm

USING MICROWAVES AS A PRE-TREATMENT FOR ENHANCING THE EXTRACTION OF POLYPHENOLS FROM GRAPE STEMS
Romero Diez, Rut; Rubio García, Joana; Matias, Ana A.; Cocero, María José; Rodríguez Rojo, Soraya

2:50pm - 3:10pm

KINETIC STUDY AND EFFECT OF DIFFERENT PARAMETERS ON COMPOSITION OF VOLATILE OIL OF MYRISTICA FRAGRANS SEEDS EXTRACTED BY HYDRODISTILLATION AND STEAM DISTILLATION ASSISTED BY MICROWAVE
Benkaci-Ali, Farid; Bouchachia, Chahinez; Scholl, Georges; Eppe, Gauthier

3:10pm - 3:30pm

ELECTRICITY AND CARBOHYDRATES PRODUCTION FROM WASTEWATER TREATMENT BY MICROALGAE-MICROBIAL FUEL CELL (m-MFC)
Rojas, Leonel; Velásquez, Sharon Belinda; Monje, Ignacio; Figueroa, Gonzalo; Roquero, Pedro; Orta, María Teresa

PROCESS INTENSIFICATION TECHNOLOGIES
Lecture Hall 100
Chair: **Gilbert CASAMATTA**

2:00pm - 2:30pm

KEYNOTE / ENZYMATIC MEMBRANE REACTORS: A CRITICAL ANALYSIS OF THEIR INTEREST THROUGH THE COUPLING OF EXPERIMENTS AND MODELING.
Sanchez-Marcano, Jose; Abejon, Ricardo; Belleville, Marie-Pierre

2:30pm - 2:50pm

INTENSIFICATION OF THE SYNTHESIS OF BIO-BASED ORGANIC CARBONATES FROM CO2
Décultot, Marie; Ledoux, Alain; Fournier, Marie-Christine; Estel, Lionel

2:50pm - 3:10pm

CATALYTIC DISTILLATION FOR THE ESTERIFICATION OF GLYCOLIC ACID AND BUTAN-1-OL
Mutschler, Carole; Nikitine, Clémence; Fongarland, Pascal

3:10pm - 3:30pm

POLYMERIC CATALYTIC MEMBRANE REACTORS IN GREEN CHEMISTRY
López-Viveros, Melissa; Gu, Yingying; Emin, Clélia; Favier, Isabelle; Gómez, Montserrat; Lahitte, Jean-François; Remigy, Jean-Christophe

3:30pm - 4:10pm

Coffee Break, Poster Session
The poster program is available by clicking here

4:10pm - 5:30pm

ACTIVATION METHODS
Lecture Hall 300
Chair: **Ulises Jauregui-Haza**

4:10pm - 4:30pm

TREATMENT OF REAL HOSPITAL EFFLUENT IN A CONTINUOUS FALLING FILM PHOTOREACTOR: EFFECT OF COMPETITION AND PROCESS ENHANCEMENT
ASSADI, Aymen; KANE, Abdoulaye; JUNG, Aude-Valerie

4:30pm - 4:50pm

OZONE FOR GREEN PAPER DEINKING PROCESSES: FOCUS ON THE OZONE IMPACT ON RECYCLED FIBER PAPERMAKING PROPERTIES
Ghorbel, Amina; Marlin, Nathalie; Boyer, Agnes; Aurousseau, Marc

[illegible]

ELECTROBIOLEACHING FOR ENVIRONMENTAL FRIENDLY METAL RECOVERY
Tanne, Christoph Kurt; Schippers, Axel

5:10pm - 5:30pm

GREENER SYNTHESIS OF BUTYLENE CARBONATE VIA CO2 UTILISATION USING GRAPHENE-INORGANIC NANOCOMPOSITE CATALYSTSPOSITE CATALYSTS
Onyenkeadi, Victor Nnamdi; Aboelazayem, Omar; Kellici, Suela; Saha, Basu

PROCESS INTENSIFICATION TECHNOLOGIES
Lecture Hall 100
Chair: **Kamelia Boodhoo**

4:10pm - 4:30pm

MEMBRANE-BASED REACTIVE EXTRACTION OF 3-HYDROXYPROPIONIC ACID TOWARDS AN INTEGRATED PROCESS OF EXTRACTIVE BIOCONVERSION
CHEMARIN, Florian; MOUSSA, Marwen; SANCHEZ CASTANEDA, Ana Karen; ALLAIS, Florent; TRELEA, Cristian; ATHES, Violaine

4:30pm - 4:50pm

CONTROLLING PERMEATE FLUX OF COMPOSITE PVDF-TIO2 MEMBRANES BY UV IRRADIATION
Tran, Duc Trung; Mendret, Julie; Méricq, Jean-Pierre; Faur, Catherine; Brosillon, Stephan

[illegible]

NOVEL ADVANCED OXIDATION PROCESS FOR WATER TREATMENT BASED ON SHOCK INDUCED CAVITATION
Dutilleul, Hugo; Parizot, Laureanne; Chave, Tony; Nikitenko, Serguei; Da Costa, Patrick; Galvez, Maria Elena

5:10pm - 5:30pm

NARINGENIN-LOADED SILK FIBROIN NANOPARTICLES AS A PLATFORM FOR CONTROLLED DRUG RELEASE: SYNTHESIS AND CHARACTERIZATION
CARISSIMI, GUZMÁN; MONTALBAN, MERCEDES G.; SQUIRES, WILLIAM; DÍAZ-BAÑOS, F. GUILLERMO; MARTIN-GULLON, IGNACIO; VILLORA, GLORIA

Tuesday, 05/Jun/2018

9:00am - 9:50am — **Plenary lecture**
Lecture Hall 300
Pedro LOZANO (Spain)
Clean biocatalytic processes in ionic liquids and supercritical fluids

9:50am - 10:50am — **Coffee Break, Poster Session**
The poster program is available by clicking here

10:50am - 12:40pm

PROCESSES FOR BIOMASS VALORIZATION
Lecture Hall 300
Chair: **Jyri-Pekka Mikkola**

10:50am - 11:20am
KEYNOTE / BIOMASS HYDROTHERMAL FRACTIONATION MODELLING AT LAB AND PILOT SCALES: KINETICS & MASS TRANSFER
Cabeza, Alvaro; Hu, Xihua; Reynolds, Wienke; Sobron, Francisco; Smirnova, Irina; Garcia-Serna, Juan

11:20am - 11:40am
A NEW STRATEGY TO RECOVER NICKEL FROM HYPERACCUMULATOR PLANTS
Simonnot, Marie-Odile; Guilpain, Mathilde; Laubie, Baptiste; Zhang, Xin

11:40am - 12:00pm
MODELING AND SIMULATION OF THE ETHYLENE GLYCOL PRODUCTION FROM GLUCOSE IN A SEMICONTINUOUS REACTION SYSTEM
Murillo, Carlos; Irakoze, Ghislain; De Oliveira Vigier, Karine; Pérès, Yolande; Cognet, Patrick; Urrutigoity, Martine; Jérôme, François

12:00pm - 12:20pm
WASTEWATER TREATMENT BY MICROALGAE-BACTERIA CONSORTIA FOR BIOMASS PRODUCTION
Hernández, Andrea; Velásquez, Sharon Belinda; Novelo, Eberto; Yáñez, Isaura; Monje, Ignacio; Orta, Maria Teresa

12:20pm - 12:40pm
BALL-MILL SYNTHESIS OF PMOVX CATALYST FOR THE AEROBIC CLEAVAGE OF LIGNIN MODELS
AL-HUSSAINI, Louay; LAUNAY, Franck; GALVEZ

GREEN PRODUCT DESIGN AND ENGINEERING SUSTAINIBILITY
Lecture Hall 100
Chair: **Michel MEYER**

10:50am - 11:20am
KEYNOTE / SUSTAINABILITY METRICS FOR GREEN PRODUCT ENGINEERING
Uhlemann, Jens

11:20am - 11:40am
OPTIMIZATION OF Aspergillus niger LIPASE PRODUCTION BY SOLID STATE FERMENTATION OF AGROINDUSTRIAL WASTE
Khootama, Andy; Putri, Dwini Normayulisa; Hermansyah, Heri

11:40am - 12:00pm
CO2 SEQUESTRATION BY CARBONATION OF OLIVINE: A NEW PROCESS FOR OPTIMAL BENEFICIATION OF THE SOLIDS PRODUCED
Turri, Laura; Gerardin, Karine; Muhr, Hervé; Lapicque, François; Saravia, Alvaro; Szenknect, Stéphanie; Mesbah, Adel; Mastretta, Regis; Dacheux, Nicolas; Meyer, Daniel; Cloteaux, Anaëlle; Gerard, Antoine; Bertucci, Salvatore

12:00pm - 12:20pm
METHANATION OF CO2 USING NOVEL Ni AND Ni-Co CATALYST
ALRAFEI, Bachar; AZZOLINA-JURY, Federico; LEDOUX, Alain; POLAERT, Isabelle

12:20pm - 12:40pm
BIMETALLIC CU-BASED HOLLOW FIBRE ELECTRODES FOR CO2 REDUCTION
Merino-Garcia, Ivan; Albo, Jonathan; Krzywda, Piotr; Mul, Guido; Irabien, Angel

PROCESS DESIGN, MODELLING AND OPTIMIZATION
Thesis Room
Chair: **Pascal Fongarland**

10:50am - 11:20am
KEYNOTE / SAFETY INVESTMENT OPTIMIZATION IN CHEMICAL PROCESS INDUSTRY
Roy, Sandip

11:20am - 11:40am
MULTI-PERIOD SIDE WIDE HEAT INTEGRATION SOLUTION IN ECO-INDUSTRIAL PARKS
kachacha, christina; farhat, alaa; zoughaib, assaad

11:40am - 12:00pm
MIXED CULTURE OF SACCHAROMYCES CEREVISIAE AND CHLORELLA VULGARIS: CELL COUNTING METHOD AND MEDIUM DESIGN
La, Angéla; Taidi, Behnam; Perré, Patrick

12:00pm - 12:20pm
NEW ALTERNATIVE SOLVENTS FOR AROMAS EXTRACTION BASED ON SYNERGISM IN MIXTURES
Rodríguez-Donis, Ivonne; Thiebaud-Roux, Sophie; Lavoine, Sophie; Gerbaud, Vincent

12:20pm - 12:40pm
SIMULTANEOUS OPTIMIZATION OF SOLVENT, WATER, AND ENERGY CONSUMPTION: THE CASE OF CIMV ORGANOSOLV
MOUNTRAKI, Aikaterini; BENJELLOUN-MLAYAH, Bouchra; KOKOSSIS, Antonis

12:40pm - 2:00pm — Lunch

2:00pm - 2:50pm — **Plenary lecture**
Lecture Hall 300
FRANCOIS MONNET (France)
Several nuances of green for a sustainable biobased chemistry

3:00pm - 4:00pm

PROCESSES FOR BIOMASS VALORIZATION
Lecture Hall 300
Chair: **Edith Lecomte**

3:00pm - 3:20pm
THE LORVER CHAIN: HOW TO CREATE VALUE FROM ABANDONED SITES AND INERT WASTES
Simonnot, Marie-Odile; Guimont, Sophie; Jean Louis, Morel

3:20pm - 3:40pm
A GREEN PROCESS TO EXTRACT RARE EARTH ELEMENTS FROM THE ASHES OF DICRANOPTERIS DICHOTOMA
Chour, Zeinab; Laubie, Baptiste; Simonnot, Marie-Odile; Morel, Jean Louis; Tang, Yetao; Muhr, Laurence

3:40pm - 4:00pm
STUDY OF DIFFERENT STRATEGIES FOR WATER DIMINISHING OF ACID MIXTURE RESULTING FROM THE GLYCEROL OXIDATION
Aparicio, Juliana; Araque, Marcia; Capron, Mickael

GREEN PRODUCT DESIGN AND ENGINEERING SUSTAINIBILITY
Lecture Hall 100
Chair: **Jens Uhlemann**

3:00pm - 3:20pm
A NEW CONVERSION SCHEME FOR Na2SiF6, AN INTERMEDIATE PRODUCT OF THE FLUOSILICIC ACID VALORIZATION
Ndiaye, Samba; Touré, Alpha Ousmane; Sambe, Falilou Mbacké; Prat, Laurent; Cassayre, Laurent

3:20pm - 3:40pm
ECO-DESIGN OF ULTRAFILTRATION MEMBRANES FOR DRINKING WATER APPLICATION
PREZELUS, FLAVIE; BARNA, LIGIA; GUIGUI, CHRISTELLE; REMIGY, JEAN-CHRISTOPHE

3:40pm - 4:00pm
RECYCLING OF PLASTIC WASTE THROUGH CATALYTIC PYROLYSIS
Klaimy, Sophie; Duquesne, Sophie; Lamonier, Jean-François; Casetta, Mathilde; Heymans, Sophie

PROCESS DESIGN, MODELLING AND OPTIMIZATION
Thesis Room
Chair: **Gunther Kolb**

3:00pm - 3:20pm
QUALITY MONITORING AND CONTROL OF AIR-BORNE PARTICULATES AND VOCS EMISSIONS USING NEURAL NETWORK CONVOLUTION OF DYNAMIC PROCESS DATA
Tuzun, Ugur

3:20pm - 3:40pm
SEPARATION AND DEWATERING OF BIOLOGICAL MICROPARTICLES FROM LOW CONCENTRATED SUSPENSIONS BY USING THE ENERGY EFFICIENT THIN FILM FILTRATION
Lam, Zihim; Nirschl, Hermann

3:40pm - 4:00pm
MINIMUM ENTROPY ANALYSIS APPLIED TO CRACKING OF ACETONE
Rosa, David; Góes, Paulo; Manzi, João

4:00pm - 4:40pm — **Coffee Break, Poster Session**
The poster program is available by clicking here

4:40pm - 5:50pm

PROCESSES FOR BIOMASS VALORIZATION
Lecture Hall 300
Chair: **MARIA TERESA ORTA LEDESMA**

4:40pm - 5:10pm
KEYNOTE / LIGNIN DEPOLYMERIZATION IN SUPERCRITICAL WATER AT SHORT RESIDENCE TIME
Abad, Nerea; Perez Velilla, Eduardo; Cocero, Maria Jose

GREEN PRODUCT DESIGN AND ENGINEERING SUSTAINIBILITY
Lecture Hall 100
Chair: **Sharon Velasquez**

4:40pm - 5:10pm
KEYNOTE / A COMPARATIVE LIFE CYCLE ASSESSMENT APPROACH OF 5 ALTERNATIVE TECHNOLOGIES FOR CONVERTING MUNICIPAL SOLID WASTE (MSW) INTO CHEMICALS AND ELECTRICITY IN THE UK
Chiarasumran, Nutchapon; Blanchard, Richard; Benyahia, Brahim

PROCESS DESIGN, MODELLING AND OPTIMIZATION
Thesis Room
Chair: **Ugur Tuzun**

4:40pm - 5:10pm
KEYNOTE / ELECTRICITY FROM PLANTS: OPERATING A BIOLOGICAL FUEL CELL IN A CONSTRUCTED WETLAND
Roquero, Pedro

5:10pm - 5:30pm

LIQUEFIED GASES AS ALTERNATIVE SOLVENTS FOR EXTRACTION OF NATURAL PRODUCTS

RAPINEL, Vincent; RAKOTOMANOMANA, Njara; VALLAGEAS, Alain; CHEMAT, Farid

5:30pm - 5:50pm

WOODY AND AGRICULTURAL BIOMASS TORREFACTION: A NEW APPROACH TO MODEL SOLID CONVERSION AND VOLATILES FORMATION BASED ON BIOMASS EXTRACTED COMPONENTS

Gonzalez-Martinez, Maria

5:10pm - 5:30pm

THEORETICAL APPROACH TO EXERGETIC, THERMOECONOMIC AND LIFE CYCLE ASSESSMENT OF ALUMINUM PRIMARY PRODUCTION

Carrera, Eduardo; Malpica, Freddy; Azzaro-Pantel, Catherine

5:30pm - 5:50pm

A COMPARATIVE STUDY ON SUSTAINABILITY ANALYSIS OF BIOTIC AND ABIOTIC ELECTROCHEMICAL REDUCTION TECHNIQUES

Okoroafor, Tobechi; Velasquez-Orta, Sharon

5:10pm - 5:30pm

MODELLING OF HYDROGEN PRODUCTION FROM BIO-WASTE UNDER ASPEN PLUS

Moris Hernandez, Judith; Abdelouahed, Lokmane; Melle Sanchez, Alejandra; Estel, Lionel

8:15pm - 11:00 pm **Gala Diner**
Hôtel Dieu, Toulouse

[redacted]

[redacted] Plenary lecture
Lecture Hall 300
KRISHNA NIGAM (India)
Green Process Intensification using Novel Device

10:05am - 11:05am **Coffee Break, Poster Session**
The poster program is available by clicking here

11:05am - 12:35pm PROCESSES FOR BIOMASS VALORIZATION, BIOREFINERY
Lecture Hall 300
Chair: **Pedro Roquero**

11:05am - 11:35am

KEYNOTE / INTEGRATED EXTRACTION-ADSORPTION PROCESS FOR SELECTIVE RECOVERY OF ANTIOXIDANTS FROM FOOD INDUSTRY BY-PRODUCT

Pradal, Delphine; Vauchel, Peggy; Decossin, Stéphane; Dhulster, Pascal; Dimitrov, Krasimir

11:35am - 11:55am

EVOLUTION OF MICROBIAL DIVERSITY DURING TOLUENE DEGRADATION IN A TWO-PHASE PARTITIONING BIOREACTOR INVOLVING A HYDROPHOBIC IONIC LIQUID AS A NON-AQUEOUS PHASE LIQUID

RODRIGUEZ CASTILLO, Santiago; Amrane, Abdeltif; Couvert, Annabelle

11:55am - 12:15pm

SYNTHESIS OF N-METHYL-D-GLUCOSEAMINE OVER NI IMPREGNATED HYPERCROSSLINKED POLYSTERENE

Mikhailov, Stepan; Doluda, Valentin; Sulman, Esther; Lakina, Natalia; Matveeva, Valentina; Sulman, Mikhail; Nikoshvili, Linda

12:15pm - 12:35pm

STARCH-BASED BIOPLASTICS FROM MICROALGAE: SCREENING OF STRAINS FOR STARCH ACCUMULATION AND PLASTICIZATION ASSAYS OF UNFRACTIONATED MICROALGAE

Mathiot, Charlie; Delrue, Florian; Sassi, Jean-François; Le-Moigne, Nicolas

NEW REACTION MEDIA AND GREEN SOLVENTS
Lecture Hall 100
Chair: **Heri Hermansyah**

11:05am - 11:35am

KEYNOTE / REFINED FOR A BETTER LIFE - HIGH PRESSURE EXTRACTS

Kersch, Christof; Schulmeyr, Josef; Wuzik, Andreas

11:35am - 11:55am

POLYPHENOL OXIDASE (PPO) AND PECTIN METHYLESTERASE (PME) INACTIVATION BY MEANS OF HIGH PRESSURE CARBON DIOXIDE (HPCD)

Benito-Román, Oscar; Sanz, Teresa; Illera, Alba Esther; Melgosa, Rodrigo; Beltrán, Sagrario

11:55am - 12:15pm

SUPERCRITICAL FLUIDS: A GREEN WAY TO SYNTHESIZE CONTROLLED RELEASE SYSTEMS

Álvarez, Irene; Gutiérrez, Cristina; Rodriguez, Juan Francisco; De Lucas, Antonio; García, María Teresa

12:15pm - 12:35pm

COUMARIN MODELLING FOR PLA FUNCTIONALIZATION VIA CLICK CHEMISTRY IN SUPERCRITICAL CO2

Gracia Cortes, Eulalio; Gracia, Ignacio; Garcia, Maria Teresa; Rodriguez, Juan Francisco; De Lucas, Antonio

ENERGY SUPPLY FOR INTENSIFIED PROCESSES
Thesis Room
Chair: **Jean-Claude Charpentier**

11:05am - 11:35am

KEYNOTE / REACTIVE COUPLING OF BIODIESEL PRODUCTION AND CONVERSION OF GLYCEROL TO SOLKETAL USING AN ORGANIC ACID CATALYST

Al-saadi, Luma shihab; Eze, valentine; harvey, Adam p

11:35am - 11:55am

CENTRAL COMPOSITE DESIGN APPROACH IN THE STUDY OF OXIDATIVE DESULPHURISATION OF WASTE TYRE PYROLYSIS FUEL

CHEROP, PETER TUMWET; KIAMBI, SAMMY LEWIS; MUSONGE, PAUL

11:55am - 12:15pm

PERFORMANCE OF BUTANOL SEPARATION FROM ABE MIXTURES BY PERVAPORATION USING SILICONE-COATED IONIC LIQUID GEL MEMBRANES

Cabezas, René; Merlet, Gastón; Quijada-Maldonado, Esteban; Torres, Alejandra; Romero, Julio

12:15pm - 12:35pm

UPGRADING OF PYROLYTIC BIO-OIL BY CATALYTIC DE-OXYGENATION: PYROLYSIS OF BEECH WOOD AND FLAX SHIVES

Mohabeer, Chetna; Reyes, Luis; Abdelouahed, Lokmane; Taouk, Bechara

12:35pm - 2:00pm Lunch

2:00pm - 3:30pm

BIO CATALYTIC PROCESSES
Lecture Hall 300
Chair: **Yu-Kaung Chang**

2:00pm - 2:30pm

KEYNOTE / NICOTINIC ACID PRODUCTION USING IMMOBILIZED THERMOSTABLE NITRILASE FROM BATCH TO CONTINUOUS MODE
Anxionnaz-Minvielle, Zoé; Teepakorn, Chalore; Zajkoska, Petra; Cwicklinski, Gregory; De Berardinis, Véronique; Zaparucha, Anne; Roux, Jean-Maxime; Nonglaton, Guillaume

2:30pm - 2:50pm

OPTIMIZATION AND ECONOMIC ASSESMENT OF BIOCATALYTIC SYNTHESIS OF CYCLOMETHICONE REPLACEMENT PRODUCTS
Murcia, M. Dolores; Serrano, Mar; Delgado, Daniel; Máximo, M.Fuensanta; Bastida, Josefa; Montiel, M. Claudia

2:50pm - 3:10pm

ABIOTIC AND BIOTIC REMOVAL OF MICROPOLLUTANTS IN TERTIARY MOVING BED BIOFILM REACTORS
ABTAHI, Mehran; JUPPEAU FLAMBARD, Agathe; TERRISSE, Fanny; TOTOUIN, Thierry; JOANNIS ASSAN, Claire; ALBASI, Claire

3:10pm - 3:30pm

KLA MEASUREMENT FOR ACCURATE INVESTIGATION OF LIPOXYGENASE KINETICS
Guiga, Wafa; Guillard, Maïgwen; Boussard, Aline

NEW REACTION MEDIA AND GREEN SOLVENTS
Lecture Hall 100
Chair: **Thomas Willms**

2:00pm - 2:30pm

KEYNOTE / SUPERBASE ADDED CHOLINE CHLORIDE BASED DEEP EUTECTIC SOLVENTS FOR CO2 CAPTURE AND SEQUESTRATION
Bhawna, Bhawna; Pandey, Ashish; Pandey, Siddharth

2:30pm - 2:50pm

POLYMERIC MEMBRANES FROM WATER SOLUBLE POLYMER FOR TREATMENT OF PRODUCED WATER ON OFFSHORE PLATFORM
LI, King Wo; MERICQ, Jean Pierre; FAUR, Catherine; DERATANI, André; QUEMENER, Damien; BOUYER, Denis

2:50pm - 3:10pm

PHYSICOCHEMICAL PROPERTIES OF CO2-EXPANDED ALKYL ACETATES AND APPLICATIONS IN CHEMICAL PROCESSES.
Granero-Fernandez, Emanuel; Machin, David; Lacaze-Dufaure, Corinne; Camy, Severine; Condoret, Jean-Stéphane; Gerbaud, Vincent; Charpentier, Paul; Medina-Gonzalez, Yaocihuatl

3:10pm - 3:30pm

BIO-SOURCED DEEP EUTECTIC SOLVENTS AND SCCO2: INNOVATIVE MEDIA FOR METAL-BASED NANOCATALYSTS
Garg, Garima; Medina-Gonzalez, Yaocihuatl; Gomez, Montserrat

ENERGY SUPPLY FOR INTENSIFIED PROCESSES
Thesis Room
Chair: **Denis Bouyer**

2:00pm - 2:30pm

KEYNOTE / THE 3-FLUIDS COMBINED MEMBRANE CONTACTORS AS NEW CLIMATE-CONTROL UNITS FOR MORE ENERGY-EFFICIENT ELECTRIC VEHICLES: AN OUTLINE OF H2020 XERIC PROJECT
Charpentier, Jean-Claude

2:30pm - 2:50pm

NON-CATALYTIC MONOGLYCERIDES PRODUCTION FROM PALM OIL AND GLYCEROL
Ngamprasertsith, Somkiat; Yingyong, Thitiworrada; Sakdasri, Winatta; Sawangkeaw, Ruengwit

2:50pm - 3:10pm

PREPARATION OF ACTIVATED CARBON FROM SALAK SEED BY CHEMICAL ACTIVATION
Raksaphort, Supattra; Sawangkeaw, Ruengwit; Kamtai, Artit; Sangkatham, Surachok; Pampaisong, Jatupong; Sriwilai, Chadaporn; Suntapun, Monthira

3:30pm - 3:50pm Coffee Break

3:50pm - 4:50pm

PROCESSES FOR BIOMASS VALORIZATION, BIOREFINERY
Lecture Hall 300
Chair: **Carine Julcour**

[illegible]

EVALUATION OF A HEMP SHIVES ON OLIVE POMACE BIOFILTER FOR THE DECENTRALIZED TREATMENT OF WASTEWATER
Villalobos Garcia, Jesús; Vialle, Claire; Sablayrolles, Caroline; Montréjaud-Vignoles, Mireille; Amalric, Jean-Philippe; Desmolles, Matthias; Vignoles, Christian; Gallien, Patrice; Albasi, Claire

4:10pm - 4:30pm

NEWS PROCESSES FOR ENRICHMENT INTO SATURATED AND MONOUNSATURATED FATTY ACIDS CONCENTRATES FROM TECHNOLOGIES AND MEDIA ENGINEERING INVOLVING RAMBOUTAN KERNEL OIL.M TECHNOLOGIES AND MEDIA ENGINEERING INVOLVING RAMBOUTAN KERNEL OIL
Douniama- Lönn, Véronique Gré; Ngakegni-Limbili, Christian Adolphe; Nsa Moto, Hermine; Mouloungui, Zéphirin; Ouamba, Jean-Maurille

4:30pm - 4:50pm

PROGRESS OF FERMENTATION METHODS FOR BIO-SUCCINIC ACID PRODUCTION USING AGRO-INDUSTRIAL WASTE BY ACTINOBACILLUS SUCCINOGENES
Putri, Dwini Normayulisa; Sahlan, Muhamad; Montastruc, Ludovic; Meyer, Michel; Negny, Stephane; Hermansyah, Heri

NEW REACTION MEDIA AND GREEN SOLVENTS
Lecture Hall 100
Chair: **Marie-Odile Simonnot**

[illegible]

OBTENTION OF HYDROXYTYROSOL FROM AGRICULTURAL WASTES USING DEEP EUTECTIC SOLVENTS (DESS) AND SUPERCRITICAL CO2 AS RE-EXTRACTION PHASE
Cabezas Cornejo, René Andrés; Romero Figueroa, Julio Rodrigo; Vilches Espinoza, Fernanda Nair; Plaza Ramírez, Andrea Francisca

4:10pm - 4:30pm

KINETIC STUDY OF CYCLIC CARBONATE SYNTHESIS FROM EPOXIDE AND CO2 IN THE PRESENCE OF PROPYLENE CARBONATE AS A GREEN SOLVENT.
Rehman, Abdul; Fernández, Ana María López; Resul, Gunam; Harvey, Adam

4:30pm - 4:50pm

COSMO-RS SCREENING OF IONIC LIQUIDS FOR SUPERCRITICAL ENHANCED MICROEXTRACTION OF OCTACHLORO-DIBENZO-P-DIOXIN FROM AQUEOUS SOLUTIONS
Quijada-Maldonado, Esteban

ENERGY SUPPLY FOR INTENSIFIED PROCESSES
Thesis Room
Chair: **Lionel Estel**

[illegible]

H2 PRODUCTION BY PHOTOFERMENTATION WITH AN INNOVATIVE PLATE-TYPE PHOTOBIOREACTOR
Anxionnaz-Minvielle, Zoé; Turon, Violette; Cwicklinski, Gregory; Willison, John

4:10pm - 4:30pm

FIRST RESULTS OF A 200 KW FLUIDIZED BED GASIFIER
Debal, Matthieu; Girods, Pierre; Colin, Baptiste; Donnot, André; Authier, Olivier; Rogaume, Yann

4:50pm - 5:10pm CLOSING REMARKS & BEST POSTERS AWARDS (sponsored by PROSIM)
Lecture Hall 300
Jean-Claude CHARPENTIER (France) & PROSIM

5:10pm END OF CONFERENCE

ID: 145

FAME PRODUCTION FROM WASTE COOKING OIL THROUGH TRANSESTERIFICATION-OZONATION REACTION

Widianto, Aloisiyus Yuli1,2; Aubin, Joëlle2; Poux, Martine2; Xuereb, Catherine2

1Department of Chemical Engineering-University of Surabaya, Jl. Raya Kalirungkut Surabaya-East Java 60293 Indonesia; 2Laboratoire de Génie Chimique, Université du Toulouse, CNRS, Toulouse, France

As the fossil fuel resources are shortening day by day, the scarcity of petroleum reserves will give the opportunity for renewable energy sources to be the more attractive alternative. Biodiesel is considered to provide the best opportunity for renewable energy as diesel fuels. Biodiesel, is chemically defined as alkyl monoesters of fatty acid derived from vegetable oil and animal fats has attracted great interest as a replacement for petroleum because it has desirable fuel characteristic; the high flash point, admirable biodegradability and lubricity, and higher combustion efficiency compared to the corresponding properties of diesel oil. Biodiesel can be mixed in any proportion with diesel oil hence it can be applied immediately to diesel engines without much modification. less poisonous compared to the ordinary diesel oil. Biodiesel emissions are environmentally friendly and greenhouse gas friendly as it emits less carbon dioxide in the atmosphere and therefore contributes towards lessening further global warming.

Synthesis of biodiesel has been widely studied. There are many raw materials used for the synthesis both edible and non-edible oil. The use of waste cooking oil (WCO) has attracted the attention of many researchers. However, there is only a little attention focused on the use of transesterification-ozonation reaction for improving biodiesel production from WCO. Technical challenges for biodiesel production via ozone technology from the previous work comprised long reaction time, high operating cost, high energy consumption; the process needed a large amount of methanol, and low production efficiency.

The study aims to synthesize of high-quality biodiesel using intensified reactor involving double bond cracking in WCO to methyl esters, low methanol needed, low energy consumption, process safety, high selectivity and conversion in the shorter reaction time.

In this work, the biodiesel synthesis was conducted through the three experimental methods consisted of the first, two-steps process in series of transesterification and ozonation within the microchannel. The second, one-step process simultaneously of transesterification and ozonation within the microchannel; and the third, two-steps process in series involved of transesterification using batch reactor and then ozonation within the microchannel. For the two-steps process in series above, transesterification was always carried out at optimum temperature 60 °C with the molar ratio between WCO and methanol was 1:4, 1:5, 1:6, 1:7, and 1-1.5 % w/w NaOH as a catalyst. The ozonation was conducted in a tube reactor with an internal diameter and tube length respectively 1 mm and 30 m at the same operating variables but at the reaction temperature of 20 °C. The products analysis by Gas-Chromatography has revealed that transesterification was able to synthesize methyl esters compounds contained saturated and unsaturated methyl esters. Whereas ozonation results in short-chain methyl esters comprising methyl nonanoate, methyl hexanoate, and methyl octanoate through the cracking of double bond-carbon chain unsaturated methyl ester compounds, and long-chain methyl esters comprising methyl palmitate, methyl oleate, and methyl stearate. The effect of processing steps to biodiesel production will be discussed in the next study.