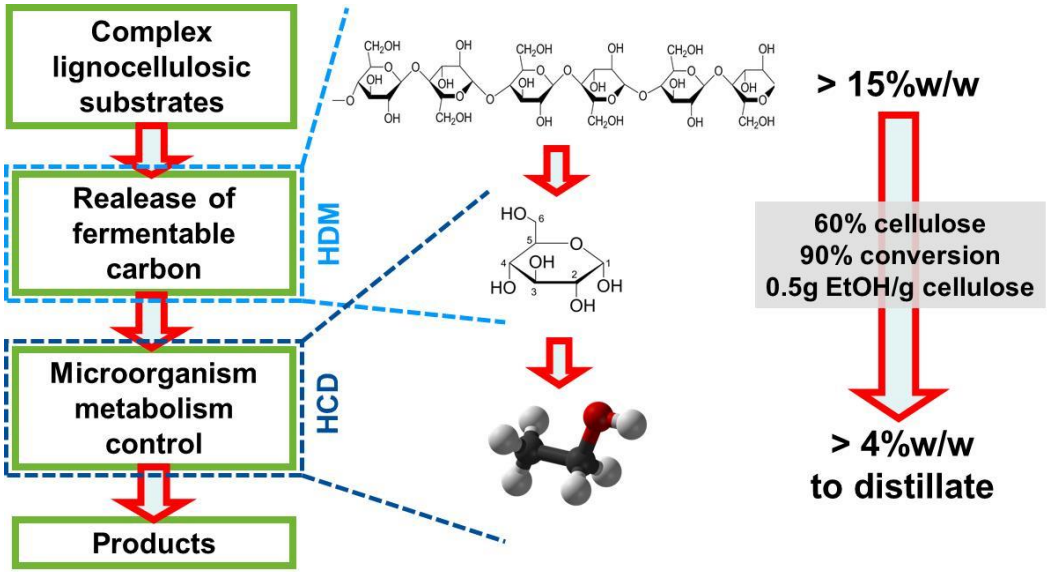
HTMS BioAsie
– 2nd Workshop at CRDB / SBFT-HUST (Hanoi, VN), - 26-30th June 2016 -

HTMS BioAsie

Production de carbone cellulosique fermentescible par biocatalyse sous haute teneur en matière sèche

Production of cellulosic fermentable carbons by biocatalysis under high dry matter content



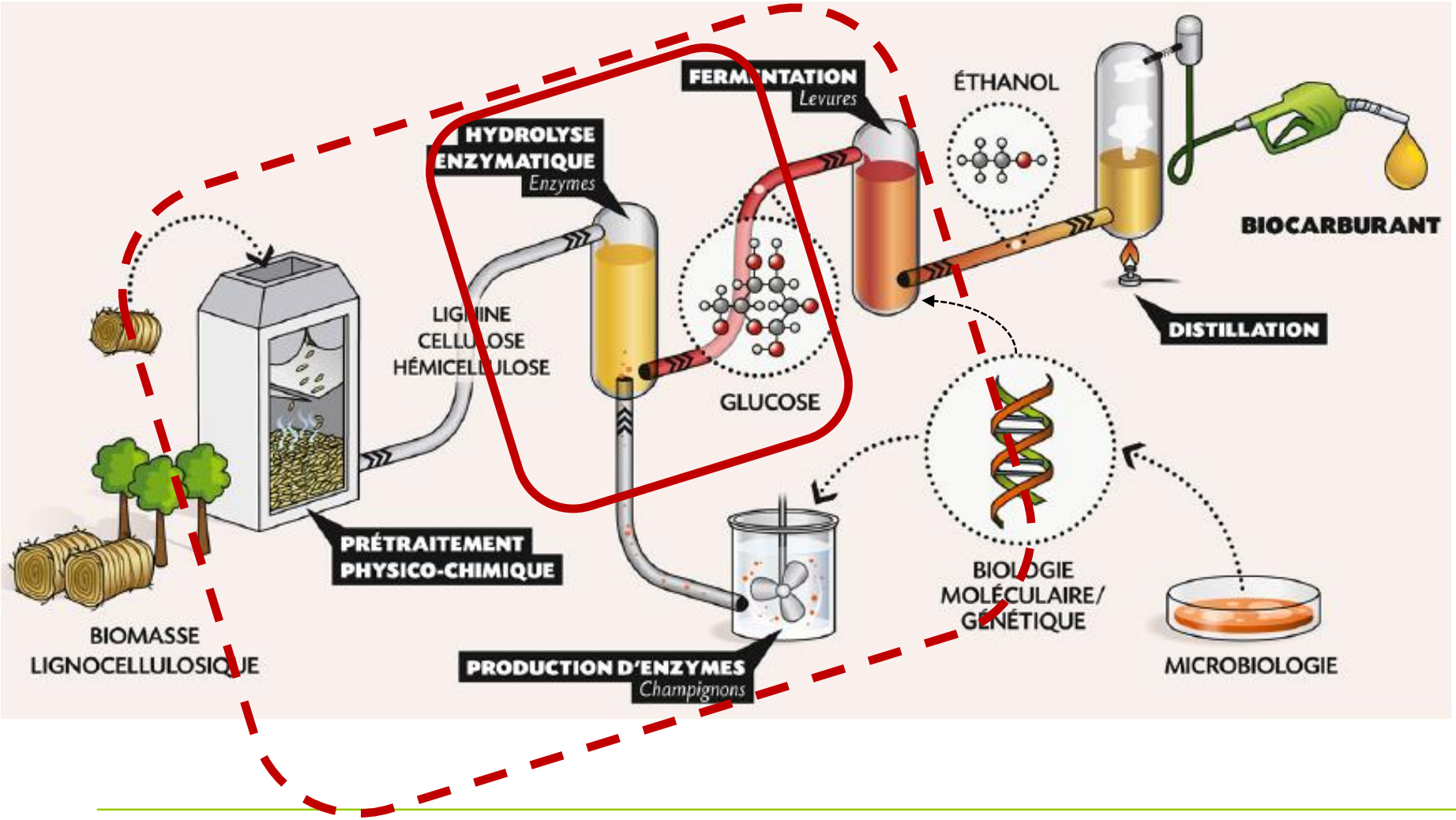
SCIENTIFIC CONTEXT

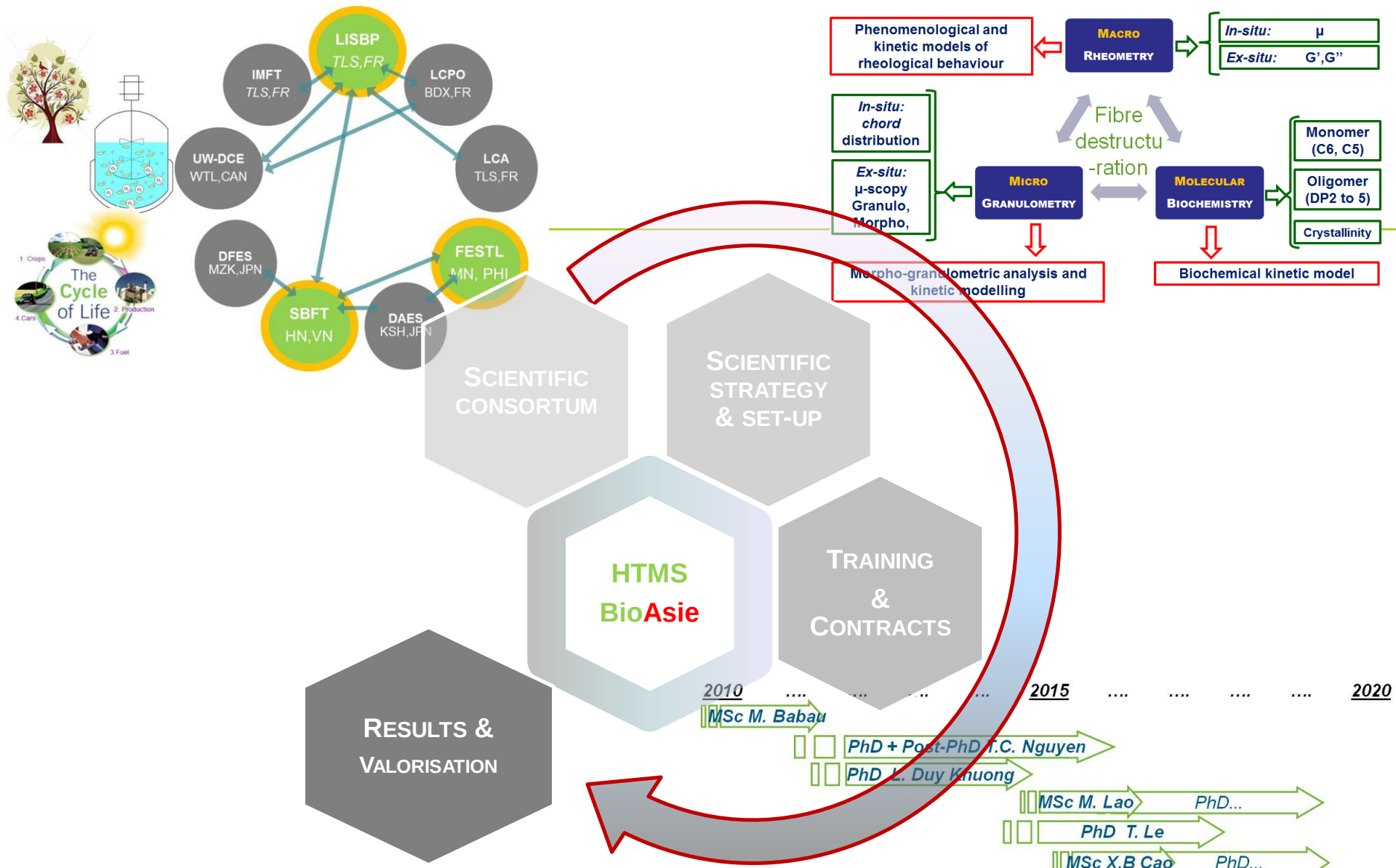
OBJECTIVES & CHALLENGES

HTMS BioAsie project explores the physical mechanisms during deconstruction of pre-treated lignocellulose matrices and its ability to bio-convert substrate to fermentable sugar with an overarching aim to control microbial cultures.

- **Release of fermentable carbon**
- **Control of microbial activity**
- **Bioprocess intensification**
- **HDM / HCD : High dry matter content / High cell density**
- **Physical and biochemical multi-scale approach**

BIO-REFINERY
… LOOKING FOR BIOPROCESS CHALLENGE?





2010 ➔ 2012 : ANS-CEPIA (INRA),
2011➔ 2014: Bourse d'Excellence Ambassade (FR)
2011➔ 2014: AUN-SEED Net,
2012➔ 2018 : ProBio3 – task 1 (FR),
2012➔ 2015: Protocol VN-JP (VN)
2014➔ 2017: Techno-1 (Erasmus, EU) and SBFT
2015➔ 2017 : HDM BioAsie (FR),
2015➔ 2016: Techno-2 (Erasmus, EU)

From experiments and data treatment up to knowledge insights:

- **Nguyen T.C. et al. Biores. Technol., 133 (2013) 563–572.**
- **Duy Khuong L. et al., Biores. Technol. 167 (2014), 33–40**
- **Nguyen T-C. et al. Adv. Biochem. Eng./Biotechnology, (2015) 149:325–357,**
- **Duy Khuong L. et al., Int. Biodeterioration & Biodegradation, 88(2014), 62-68**

HTMS BioAsie - Funding 2015

Année 2015														
	Nom	Prénom	ate début séjou	ate fin séjo	Transport		Hébergement		Restauration		Si oui qui réserve ?	Budget primitif:	Budget réalisé (LF):	Differentiel
					OUI	NON	OUI	NON	OUI	NON				
D1 (FR=>VN)	FILLAUDEAU	Luc	05/04/2015	09/04/15	X		X		X		LISBP (Frederick)	1 500,00 €	1 701,86 €	- 201,86 €
	NGUYEN	Tien Cuong	03/04/2015	12/04/15	X			X	X		LISBP (Frederick)	1 400,00 €	1 139 €	260,96 €
	LE	Tuan				X		X		X	Techno-1		- €	- €
D2 (VN=>FR)	TO	Kim Anh	21/06/2015	27/06/15	X		X		X		LISBP (Frederick)	2 000,00 €	1 386,17 €	613,83 €
	PHAM	Tuan Anh (EBTA-IPH)									Techno-2		- €	- €
	CAO	Xuan Bach (EBTA-IPH)									Techno-2		- €	- €
(PHI=>FR)	DE LEON	Rizalinda L.	21/06/2015	27/06/15	X		X		X		LISBP (Frederick)	2 000,00 €	1 881,83 €	118,17 €
	Organisation 1st workshop										LISBP (Frederick)	2 000,00 €	1 100,42 €	899,58 €
D3 (FR=>VN)	NGUYEN	Tien Cuong	non defini (sept-nov)		X		X		X		LISBP (Frederick)	1 500,00 €	1 563,51 €	- 63,51 €
	CAMELEYRE	Xavier	non defini (sept-nov)		X		X		X		LISBP (Frederick)	1 500,00 €	1 720,91 €	- 220,91 €
	LOMBARD	Eric	non defini (sept-nov)		X		X		X		LISBP (Frederick)	1 500,00 €	1 693,26 €	- 193,26 €
D4 (VN=>FR)	PHAM	Tuan Anh (EB	non defini (novembre)		X		X		X		LISBP (Frederick)	2 000,00 €	- €	2 000,00 €
											Somme:	15 400,00 €	12 187,00 €	
											Budget max:	20 000,00 €		
											Reliquat:	4 600,00 €	7 813,00 €	

HTMS BioAsie - Funding 2016 (01/07/2016)

Année 2016	Nom	Prénom	ate début séjou	ate fin séjo	Transport		Hébergement		Restauration		Si oui qui réserve ?	Budget primitif:	Budget réalisé (LF):	Differentiel
					OUI	NON	OUI	NON	OUI	NON				
D1 (VN=>PH)	TO	Kim Anh	mi mars 2016		X						LISBP (Frederick)	500,00 €	549,51 €	-49,51 €
	PHAM	Tuan Anh	mi mars 2016		X						LISBP (Frederick)	500,00 €	549,51 €	-49,51 €
							X		X				270,11 €	-270,11 €
D2 (VN=>FR)	LE	Tuan	fev 2016	avr-16			X		X		LISBP (Frederick)	3 500,00 €	3 172,00 €	328,00 €
	LE	Tuan	mai 2016	juin 2016			X		X		LISBP (Frederick)	2 000,00 €	1 738,50 €	261,50 €
	LE	Tuan	fev 2016		X						LISBP (Frederick)	1 000,00 €	1 106,00 €	-106,00 €
	Materiel											1 000,00 €	1 850,64 €	-850,64 €
D3 (VN=>FR)	PHAM	Tuan Anh	mai 2016		X		X		X		LISBP (Frederick)	1 500,00 €	0,00 €	1 500,00 €
D4 (FR=>VN)	FILLAUDEAU	Luc	fin juin 2016		X		X		X		LISBP (Frederick)	1 500,00 €	472,99 €	1 027,01 €
	CAMELEYRE	Xavier	fin juin 2016		X		X		X		LISBP (Frederick)	1 500,00 €	0,00 €	1 500,00 €
	ANNE-ARCHARD	Dominique	fin juin 2016		X		X		X		LISBP (Frederick)	1 500,00 €	913,43 €	586,57 €
	COMA	Véronique	fin juin 2016		X		X		X		LISBP (Frederick)	1 500,00 €	950,53 €	549,47 €
	CAO Xuan Bach		fin juin 2016		X						LISBP (Frederick)	1 200,00 €	890,89 €	309,11 €
(PHI=>VN)	DE LEON	Rizalinda L.	fin juin 2016		X		X		X		LISBP (Frederick)	1 500,00 €	336,70 €	1 163,30 €
	LAO Marco		fin juin 2016		X		X		X		LISBP (Frederick)	1 500,00 €	281,70 €	1 218,30 €
	Hebergement + modif						X				Hebergement + modif	0,00 €	747,27 €	-747,27 €
	Modif vol				X						Modif vol	0,00 €	491,49 €	-491,49 €
	Organisation symosium (repas, transport, pause, site web…)								X		LISBP (Frederick)	1 500,00 €	1 400,00 €	100,00 €
D5 (FR=>VN)	FILLAUDEAU	Luc	nov 2016 (1 à 2 WK)		X		X		X		LISBP (Frederick)	2 000,00 €		2 000,00 €
	CAO Xuan Bach		fin juillet 2016		X						Techno-2			
D6 (VN=>PHI)	Support MSc/Post-PhD (VN/PHI) - CAO Xuan bach				X		X		X		LISBP (Frederick)	1 000,00 €		1 000,00 €
D7 (FR=>VN)	TUAN Le (congres internati		????		X		X		X		LISBP (Frederick)			
D8 (FR=>VN)	FILLAUDEAU	Luc	fin janvier 2017		X		X		X		LISBP (Frederick)	1 500,00 €		1 500,00 €
	Jury 1										LISBP (Frederick)			
	Jury 2				X		X		X		LISBP (Frederick)	1 500,00 €		1 500,00 €
											Somme:	27 700,00 €	15 721,27 €	
											Budget max:	27 813,00 €		
											Reliquat:	113,00 €	12 091,73 €	
											2015+2016		27 908,27 €	

HTMS Website

Visit us:

http://bioasie.hust.edu.vn

Perspectives 2017-2020

- **New emerging scientific questions for period 2017-2020…**
  - Pre-treatment and physico-chemical investigation of feedstock,
  - Secretome production and bio-kinetics understanding : cell and fungi culture on solid substrates (in suspension),
  - Abilities to control cell cultures through kinetics of released fermentable cellulosic carbon.

- **… associated to new scientific challenges, our consortium intend to strengthen internal collaborations and to expand in…**
  - France (LCPO, IMFT);
  - Philippines (UST-TARC, UPLB-Biotech)
  - Vietnam (IBT and FIRI).

2nd Workshop HTMS BioAsie - Program -

	Monday 27/06	Tuesday 28/6	Wednesday 29/6	Thursday 30/6
9h00		**LIGNOCELLULOSIC ENZYMES**	**HYDROLYSIS & TRANSFER LIMITATION**	**LAB TOUR**
		P2- VU Nguyen Thanh (FIRI)	**P6- ANNE-ARCHARD Dominique**	**FIRI (Food Industries Research Industry)**
		Biodiversity for lignocellulase (tbc)	Rheometry and viscosimetry to highlight bioprocess: from fundamentals to bioprocess application	
		5min lab+ 45min pres	*5min lab+ 30min pres + 30min disc*	*60-90min visit*
		P3.PHI Quyet Tien (IBT)	**P7- LE Tuan (LISBP / CRDB)**	**IBT (Institute of Biotechnology, VAST)**
		Expression of lignin-degrading enzymes and applications in pretreatment of biomass	Investigation of physical mechanisms during deconstruction of pretreated ligno-cellulosic matrixes: from pure enzymatic activity to cocktail.	
		5min lab+ 45min pres	*45min pres*	*60-90min visit*
		P4- LE Thanh Ha (SBFT)	**P9- CAO Xuan Bach (LISBP / CRDB)**	**Conclusion (Dr.FILLAUDEAU L., Pr. TO K.A and Pr. DE LEON R.)**
		Cellulase of bacteria isolated from termite gut	Efficiency and physical limitations during hydrolysis of organosolv-sugarcane bagasse and hard/soft wood paper-pulp: comparison of commercial enzymatic cocktail and Aspergillus sp. secretom.	Opportunities and opened discussion HTMS enlargment - On-going call
		5min lab+ 45min presentation	*45min pres*	*30min discussion (at IBT)*
12h00		Open discussion	Open discussion	
		Lunch	**Lunch**	**Lunch**
13h30	**Welcome / Coffee**	**CULTURE**	**CULTURE**	
	Opening (Pr. TO K.A and Dr. FILLAUDEAU L.)	**P5- TO Kim Anh (CRDB)**	**P10- DE LEON Rizalinda & LE Duy Khuong (FETSL-UPD)**	
	Opening remark by HUST/SBFT Reporting of HTMS actions Overview of 2016 HTMS workshop program	Efficient hydrolysis of fractionated bagasse by fungal secretome	Consolidated process	
	25min presentation	*45min pres*	*5min lab+ 45min presentation*	
	PRETREATMENT			
	P1- PHAM Tuan Anh (CRDB)	**P7- COMA Veronique (LCPO)**	**P11- LAO Marco (FETSL)**	
	Formic-fractionation of bagasse for cellulose materials	From intermediate compounds during hydrolysis to advanced functional polymer materials	Bio-ethanol production from solid state fermentation	
	5min lab+ 45min presentation	*5min lab+ 45min pres*	*5min lab+ 45min presentation*	
	LAB TOUR			
	CRDB (Center for Research & Development in Biotechnology)			
17h00	*60min visit*			

OUTLINES
Monday 27th June

OPENING
(Pr. TO K.A and Dr. FILLAUDEAU L.)
"Opening remark by HUST/SBFT
Reporting of HTMS actions
Overview of 2016 HTMS workshop program

PRETREATMENT

P1- PHAM Tuan Anh (CRDB)
Formic-fractionation of bagasse for cellulose materials

LAB TOUR
CRDB (Center for Research & Development in Biotechnology)

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INRA SCIENCE & IMPACT
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INSA TOULOUSE
Université de Toulouse

OUTLINES
Tuesday 28th June

LIGNOCELLULOSIC ENZYMES

P2- VU Nguyen Thanh (FIRI)
Biodiversity for lignocellulase (tbc)

P3.PHI Quyet Tien (IBT)
Expression of lignin-degrading enzymes and applications in pretreatment of biomass

P4- LE Thanh Ha (SBFT)
Cellulase of bacteria isolated from termite gut

CULTURE

P5- TO Kim Anh (CRDB)
Efficient hydrolysis of fractionated bagasse by fungal secretome

P6- COMA Veronique (LCPO)
From intermediate compounds during hydrolysis to advanced functional polymer materials

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OUTLINES

Wednesday 29th June

HYDROLYSIS & TRANSFER LIMITATION

P7- ANNE-ARCHARD Dominique
Rheometry and viscosimetry to highlight bioprocess: from fundamentals to bioprocess application

P8- LE Tuan (LISBP / CRDB)
Investigation of physical mechanisms during deconstruction of pretreated ligno-cellulosic matrixes: from pure enzymatic activity to cocktail.

P9- CAO Xuan Bach (LISBP / CRDB)
Efficiency and physical limitations during hydrolysis of organosolv-sugarcane bagasse and hard/soft wood paper-pulp: comparison of commercial enzymatic cocktail and Aspergillus sp. secretom.

CULTURE

P10- DE LEON Rizalinda & LE Duy Khuong (FETSL-UPD)
Consolidated process

P11- LAO Marco (FETSL)
Bio-ethanol production from solid state fermentation

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OUTLINES
Thursday 30th June

LAB TOUR

FIRI (Food Industries Research Industry)

IBT (Institute of Biotechnology, VAST)

Conclusion
(Dr.FILLAUDEAU L., Pr. TO K.A and Pr. DE LEON R.) "
Opportunities and opened discussion
HTMS enlargment & On-going calls

Meeting with M. Mehdi SALIM at French Embassy

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