HEVEA / GUAYULE
Latexes & Gloves

CTTM
CENTRE DE TRANSFERT
DE TECHNOLOGIE DU MANS

M. DORGET, CTTM
S. PALU, CIRAD
G. GUERIN, PIERCAN

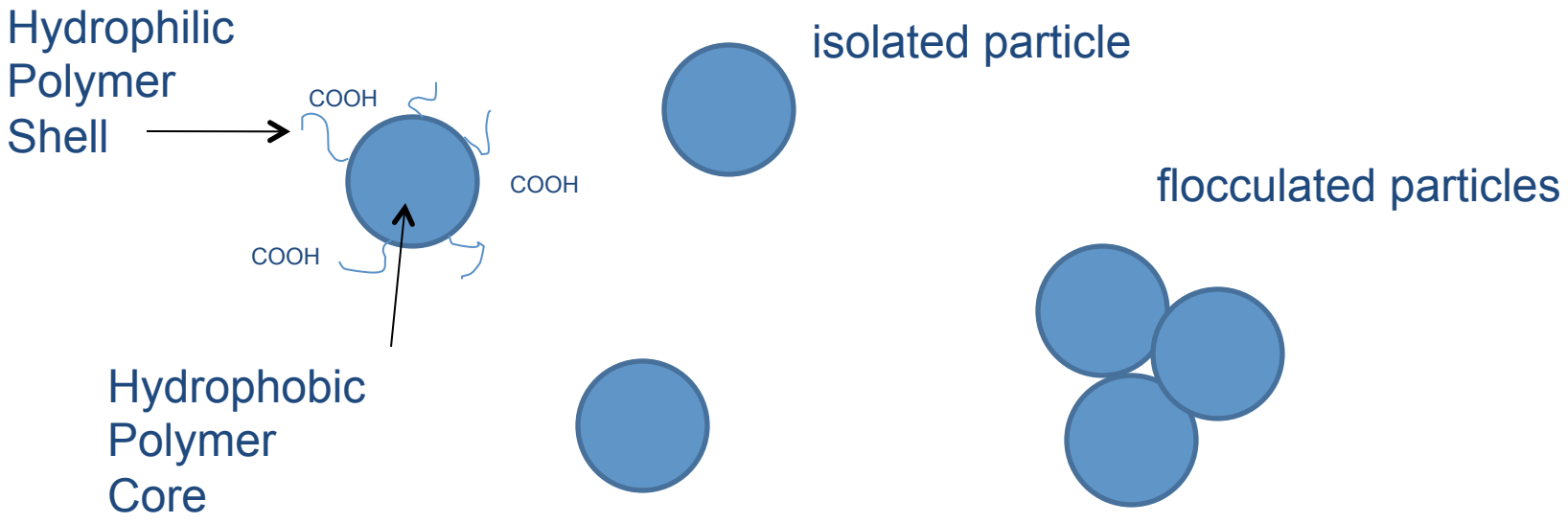
cirad
LA RECHERCHE AGRONOMIQUE
POUR LE DÉVELOPPEMENT

PIERCAN

www.cttm-lemans.com

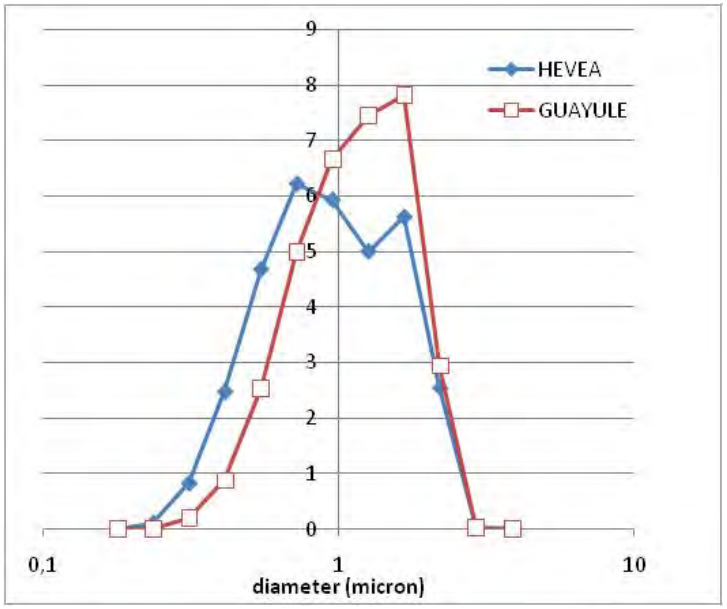
20, rue Thalès de Milet - Technopole université - 72000 Le Mans - France - Tél. 33 (0)2 43 39 46 46 - Fax. 33 (0)2 43 39 46 47

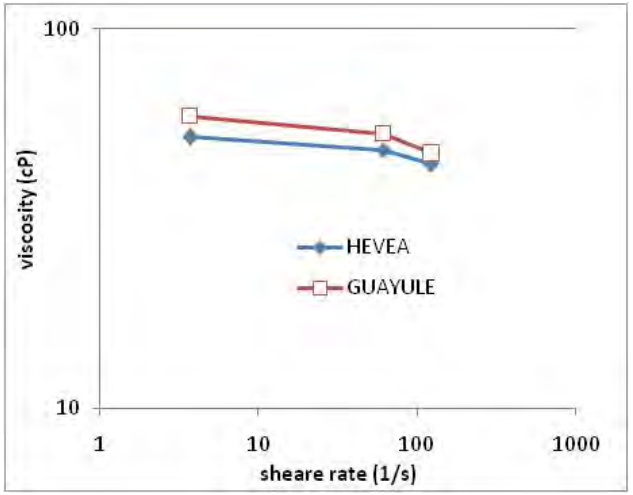
wet characterization



wet characterizations

	commercial HEVEA latex	commercial GUAYULE latex
Solid content (%)	61.4	55.6
Viscosity (Cp)	48	53
pH	9.6	10.9
Average size (µm)	1.0	1.2





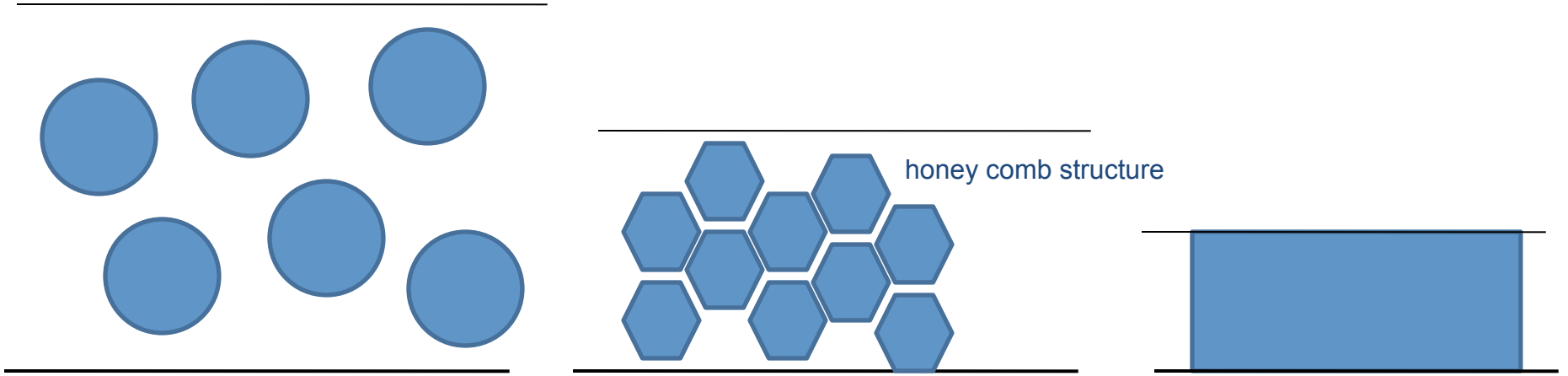
➔ **Similar wet characteristics**

dry characterizations

drying procedure :

- 2 week at ambient condition
- 2h at 110°C

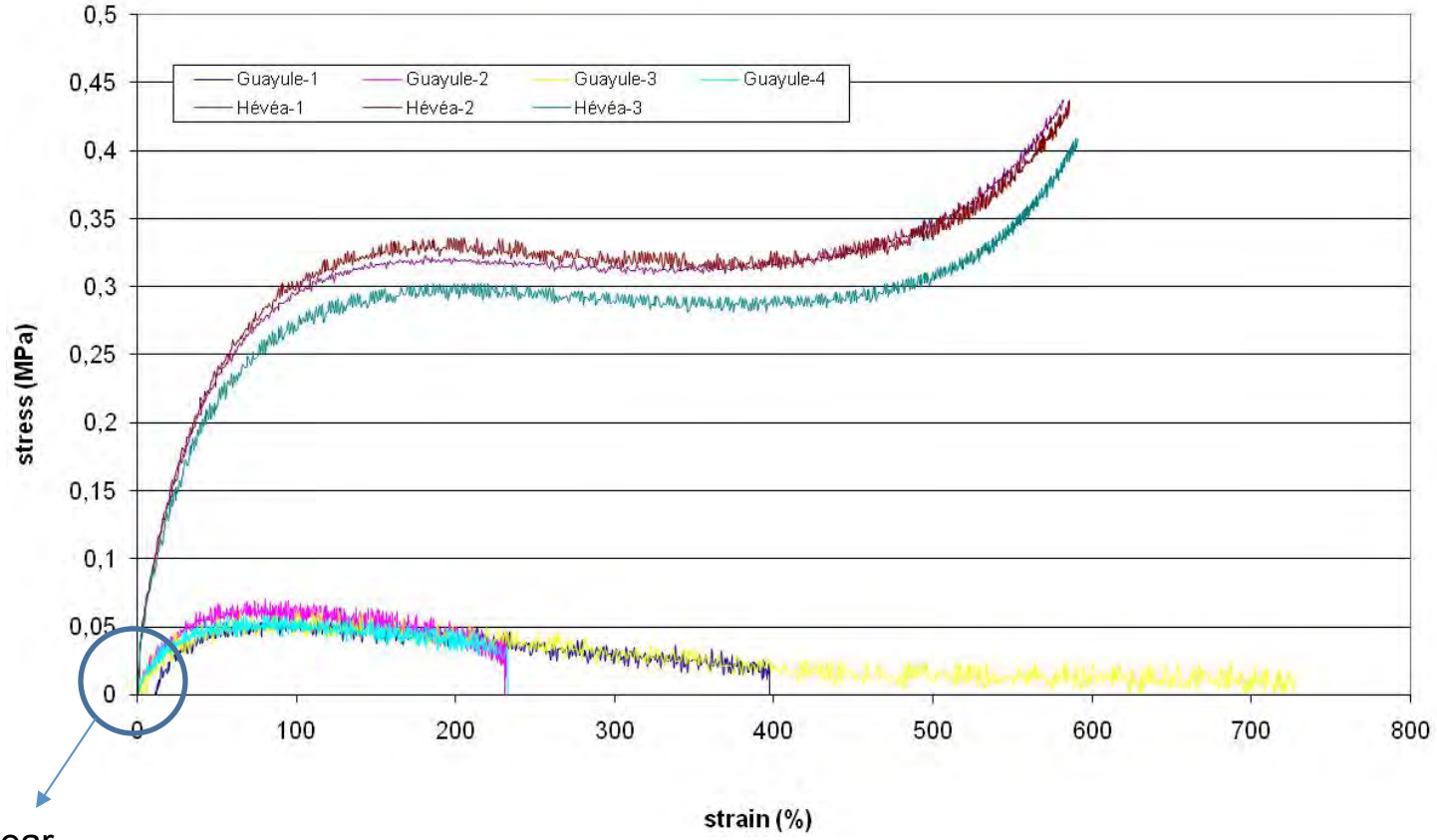
1. concentration
2. deformation
3. coalescence



drying process

No additive, no vulcanisation

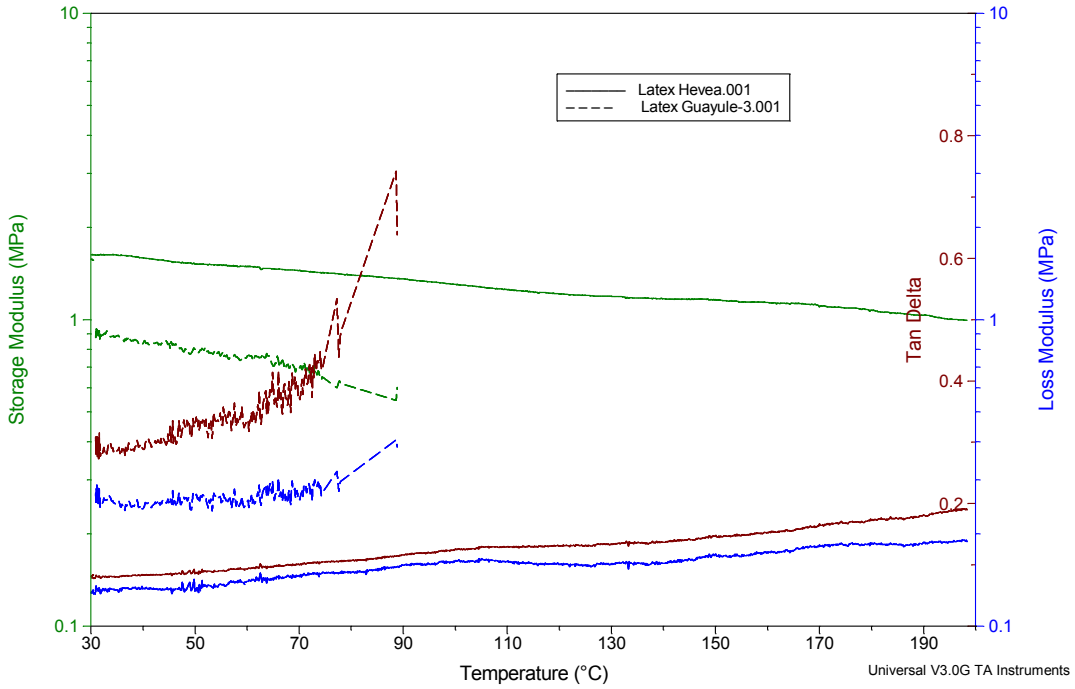
dry characterizations : great strain



Linear domain

- HEVEA film behaves like a “thermoset” polymer
- GUAYULE film behaves like a “thermoplastic” polymer

dry characterizations : linear domain

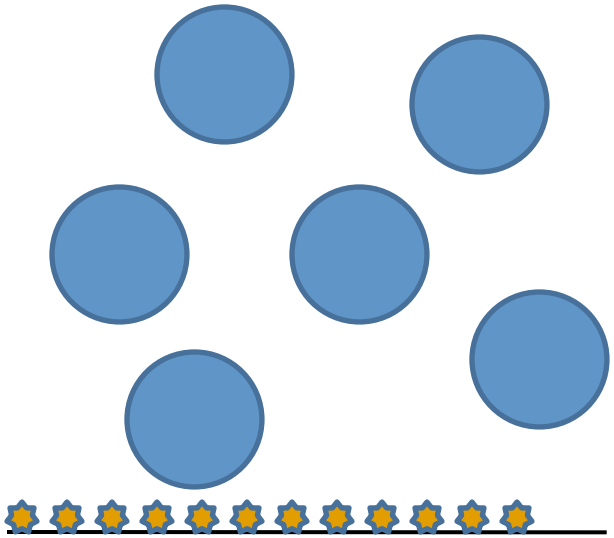


- HEVEA film behaves like a "solid" film as far as 200°C
- GUAYULE film behaves like a "liquid" film since 100°C

➔ **Very different dry characteristics**

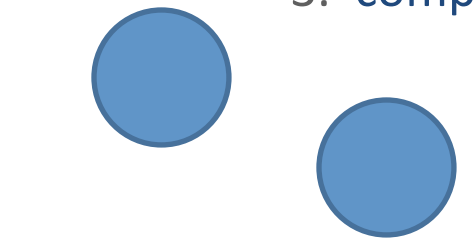
gloves production

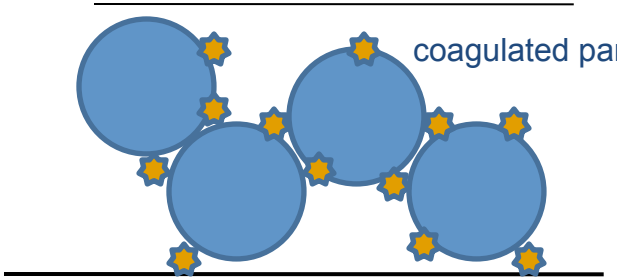
1. coagulant surface treatment
2. latex surface coagulation
3. compaction



Coagulant surface treated

free particle





coagulated particle

surface coagulation process

with additives and vulcanisation

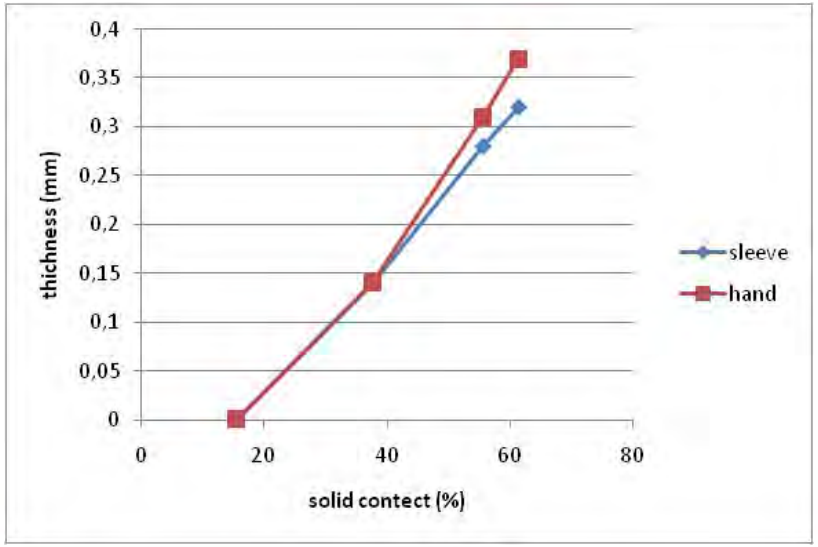
gloves production

quality progress after formulation and process adaptations

gloves production : quantitative evaluations

	commercial HEVEA latex	commercial GUAYULE latex	EU-PEARLS GUAYULE light phase latex	EU-PEARLS GUAYULE heavy phase latex
Solid content (%)	**61.4**	**55.6**	**37.7**	**15.5**
Sleeve thickness (mm)	**0.32**	**0.28**	**0.14**	**-**
Hand thickness (mm)	**0.37**	**0.31**	**0.14**	**-**

➔ **GUAYULE gloves thickness**
≈ HEVEA gloves thickness
are equivalent if solid content are the same



gloves production : qualitative evaluations

	commercial HEVEA latex	commercial GUAYULE latex	EU-PEARLS GUAYULE light phase latex	EU-PEARLS GUAYULE heavy phase latex
Vulcanising dispersion ratio	**27**	**54**	**54**	**54**
Stress at break (Mpa)	**17**	**7.0**	**13.3**	**-**
Strain at break (%)	**810**	**860**	**808**	**-**

➔ **GUAYULE and HEVEA gloves mechanical properties are similar after slight formulation and process adaptations**

CONCLUSIONS

- wet characterizations : HEVEA and GUAYULE latex are very similar

- dry characterizations :

HEVEA latex gives “solid” film and GUAYULE latex “liquid” film

- gloves production : process behaviors are similar

- gloves characterizations :

slight formulation and process adaptations bring to similar mechanical properties