



## AXEL'ONE

Ontology Modeling – Axel'One contribution (Polymers & Composites Materials)

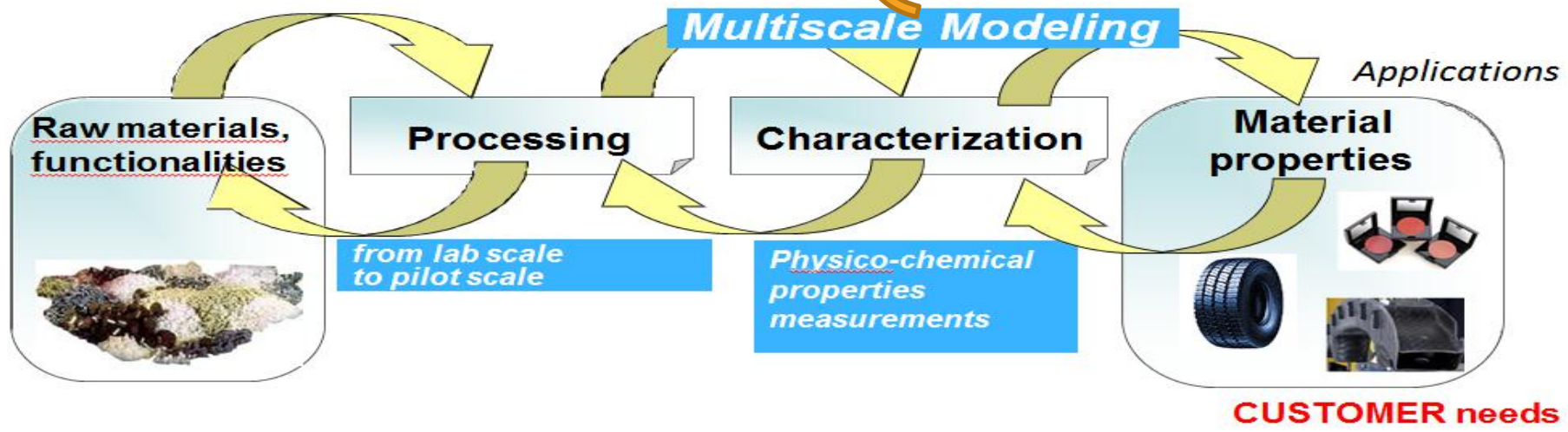
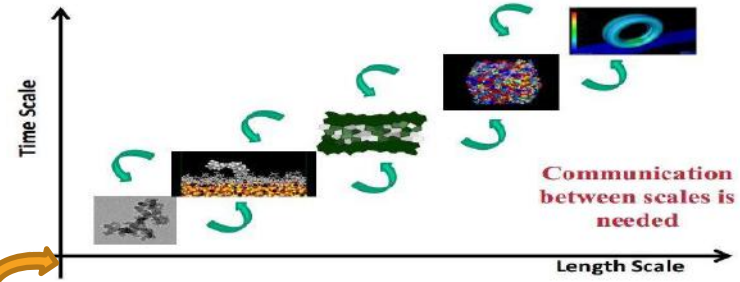
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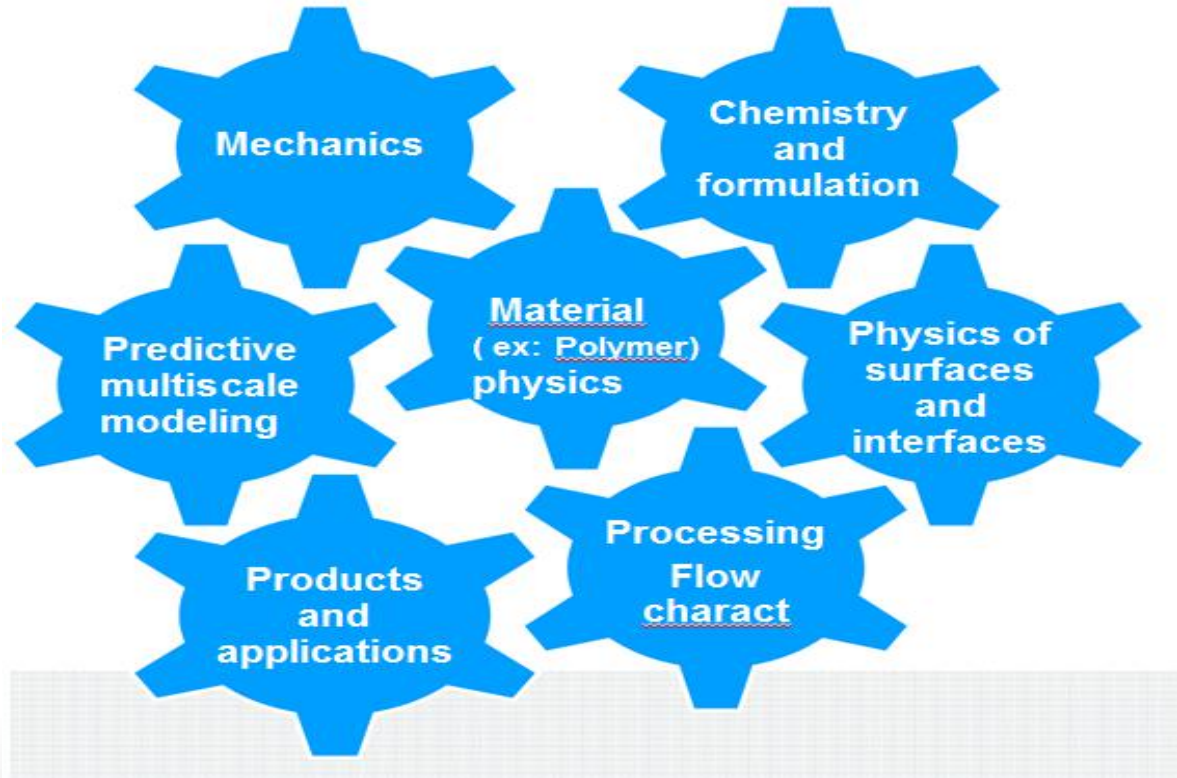
The Chemistry & Environment  
Collaborative Innovation Platform

# Relationships between processing, structure & properties in the field of polymers & composites materials

Multiscale modeling and experiments



# Competency mapping *on* characterization and processing for polymer based material and composites



# Characterisation tools & competencies linked to market needs

## Materials

<b>Organic</b>	Polymers and their formulations
<b>Inorganic</b>	Oxides & Ceramics, Cristal
<b>Hybrids &amp; formula</b>	

## Properties

<b>Chemical</b>	Structure, Composition, Purity
<b>Physico-chemical</b>	Permeability, Surface tension, Vapour pressure, Wettability, States of matter, of surfaces...
<b>Physical</b>	Density, pH, Rheological, (viscosity & viscoelasticity) Thermal & thermo-mechanical, Mechanical (static and dynamic strain, fatigue failure) Optical, Magnetic, Electric & dielectric, Piezoelectric ...
<b>Biological</b>	Biochemical, Therapeutic, Toxicological...

Characterisation tools

## Functionalities

<b>Main functionalities</b>	hydrophobicity/hydrophilicity, antioxidant Conductivity, mechanical strength, adsorption capacity Durability (resistance to abrasion, to aggressive conditions...) Response to stimuli, control release, Biocompatibility, antimicrobial...
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## Main application fields and final market

<b>Transportation</b>	Lightweight materials, Catalysis
<b>Medical</b>	Devices, Tissue , Engineering
<b>Aerospace &amp; Defence</b>	
<b>Energy</b>	Batteries
<b>Environment</b>	Gas Sensors, Filters, Recycling

# Focus on polymer material modeling and characterization

