

SusChem 2017 Brokerage Event

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ARKEMA: Calls of interest

ARKEMA TODAY



€7.5 bn
sales



19,700
employees
worldwide



Worldwide
presence
in 50 countries



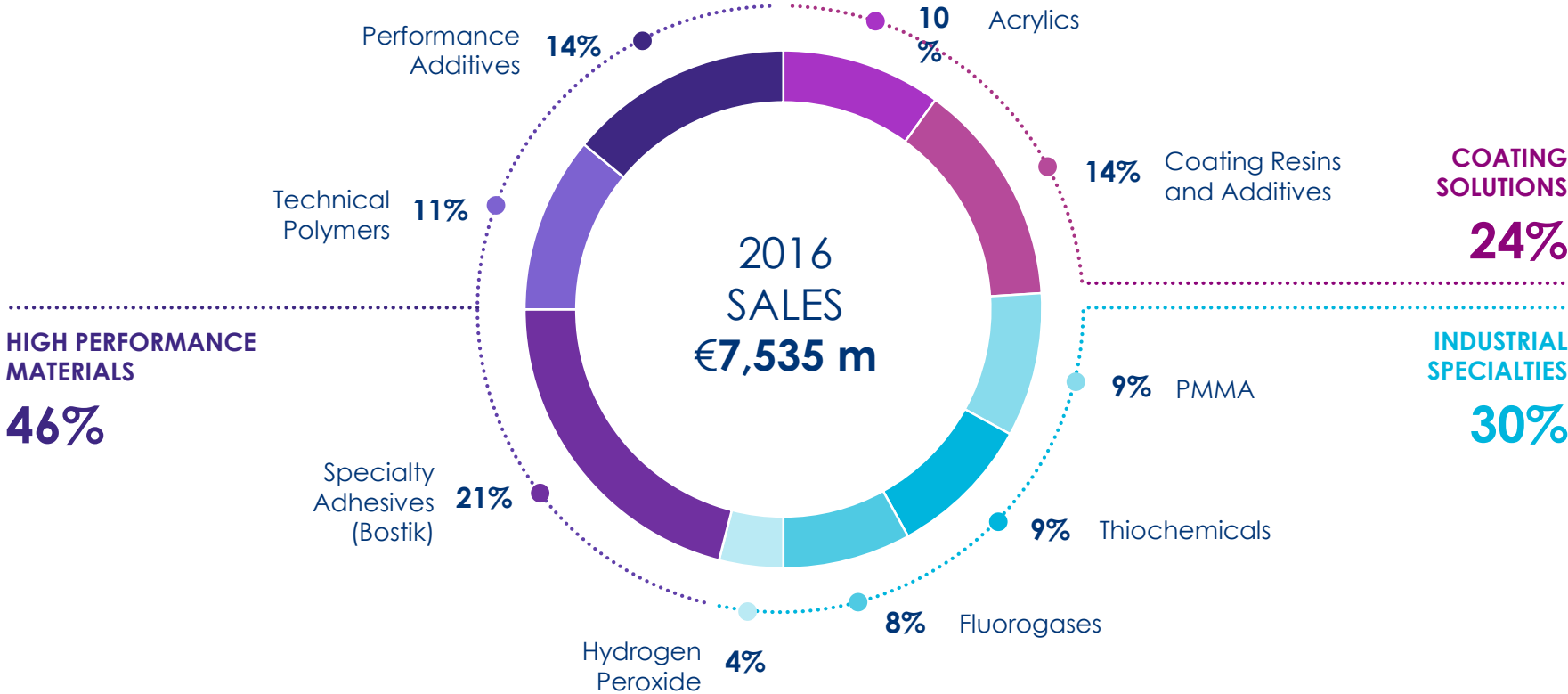
133
industrial sites



3 R&D
and innovation
geographical hubs



SIMPLIFIED PORTFOLIO WITH 9 BUSINESS LINES



- Modelling to speed up product development. Case study in following slides.

DT-NMBP-10-2019: Adopting materials modelling to challenges in manufacturing processes (RIA)

DT-NMBP-09-2018: Accelerating the uptake of materials modelling software (IA)

- Keep current assets in operation. Looking for technologies that can fit in existing plants.

DT-FOF-06-2019: Refurbishment and re-manufacturing of large industrial equipment (IA)

CE-SPIRE-05-2019: Adaptation to variable feedstock through retrofitting (IA 50%)

- Use renewable energy through new energy sources (Microwaves, ultrasounds...)

CE-SPIRE-02-2018: Processing of material feedstock using non-conventional energy sources (IA)

- Plastics recycling (interest for Arkema's polymers). Looking for partners on the value chain.

CE-SPIRE-10-2018: Efficient recycling processes for plastic containing materials (IA)

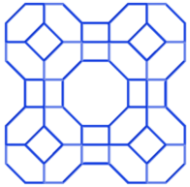
CE-NMBP-26-2018: Smart plastic materials with intrinsic recycling properties by design (RIA)

- Catalytic processes. Arkema as end user.

CE-NMBP-24-2018: Catalytic transformation of hydrocarbons (RIA)

- Marie Curie calls (ITN, IF).

Modelling of adsorption by molecular sieves: from the adsorbate molecule to the industrial separation process



Zeolites are microporous crystalline solids presenting an extremely organized structure. This uniformity grants them a unique pore size and therefore the ability to finely sieve molecules between themselves and to adsorb a substantial amount of a target molecule at very low partial pressures (trace levels).

- The project aims at developing combined tools to **enhance the development** of new products & applications in the adsorption area and to **accelerate the decision making**:
 - pre-screening of materials with promising adsorption and molecular transport properties and
 - selection of the optimal one on the basis of the process simulation results.
- **By coupling recent molecular modelling tools with well-known process simulation softwares.**
- The selected zeolites will be produced at the laboratory and their performances will be verified through pilot scale tests.
- **Arkema's contribution:**
 - Arkema is a Zeolite producer (through our Business Unit CECA)
 - Arkema's Modellization team

Relevant H2020 call: DT-NMBP-10-2019 – Adopting materials modelling to challenges in manufacturing processes (RIA) - End 2018

Or DT-NMBP-09-2018: Accelerating the uptake of materials modelling software (IA)

The data compiled from the molecular scale modelling is then integrated in a chemical process model concerning the industrial application (petrochemistry, refining, industrial gases).

- This **multiphysics** process model couples the distinct phenomena taking place in a real industrial unit:
 - Mass transfer.
 - Heat transfer.
 - Adsorption.
 - Hydrodynamic.
- The **multiscale** aspect of this approach grants the process model an extreme representativity.
 - The macroscale parameters provide a fine description of adsorption phenomena since they are derived from molecular modelling simulations.
- This approach provides a substantial time saving in zeolite structure research and development and is able to cover their behavior in all the concerned dimensions: from the molecule to the process application.

Contact details for project idea(s):

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