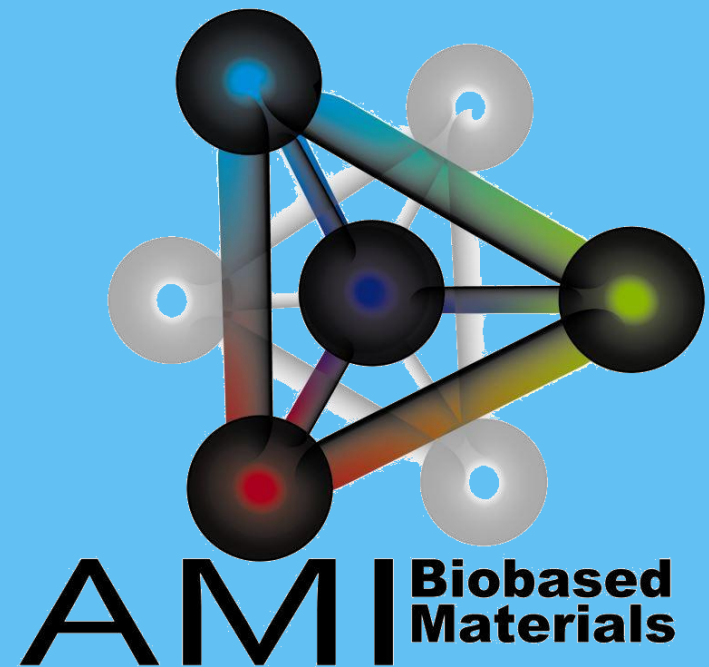


Welcome to AMIBM!

Prof. Stefan Jockenhövel
scientific director AMIBM

Dr. Richard Ramakers
managing director AMIBM

March 2017



What's in a name?

AMIBM



What's in a name?

AMI.BM



What's in a name?

AMI-BM



AMI...

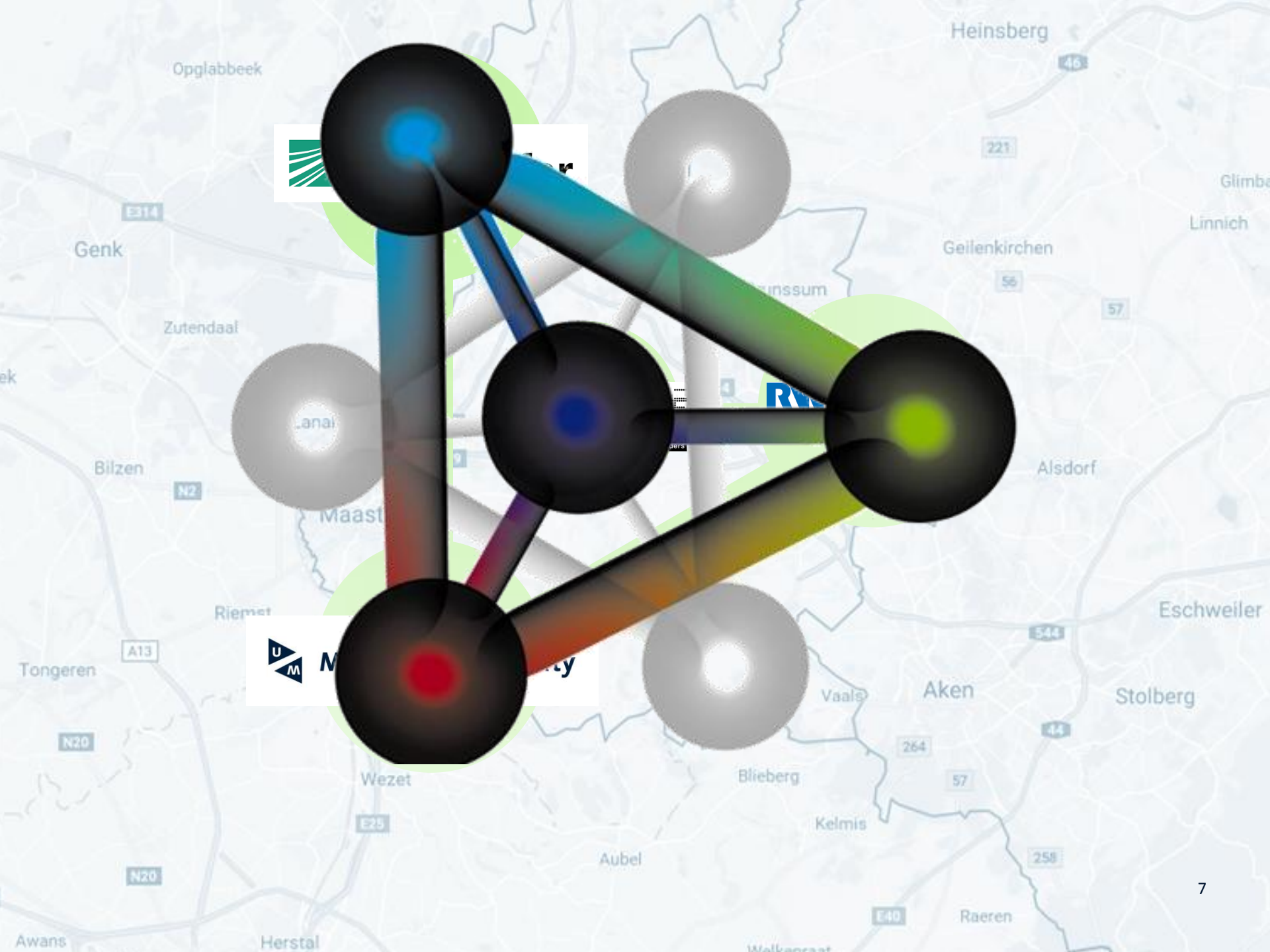
AMI, e (amitié) **friend**

A person with whom one has
a bond of mutual affection

- A unique cooperation of UM, RWTH and Fraunhofer
- Realised with substantial financial support of the Province of Limburg
- Situated at Brightlands Chemelot Campus

Many friends pushed the initiative





...BM = Biobased Materials



Transition is our ~~tradition~~ * *mission*

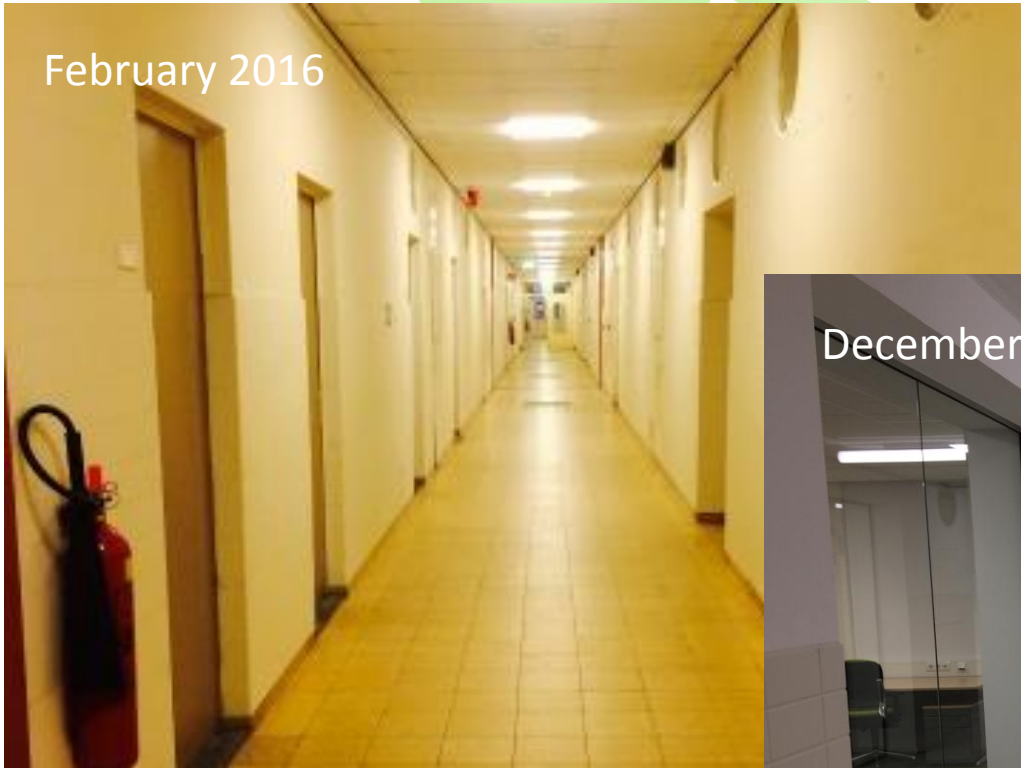
- Coal
- Crude Oil
- Biobased Materials



* Quote Gouverneur Theo Bovens

Transition of Building = Building for transition

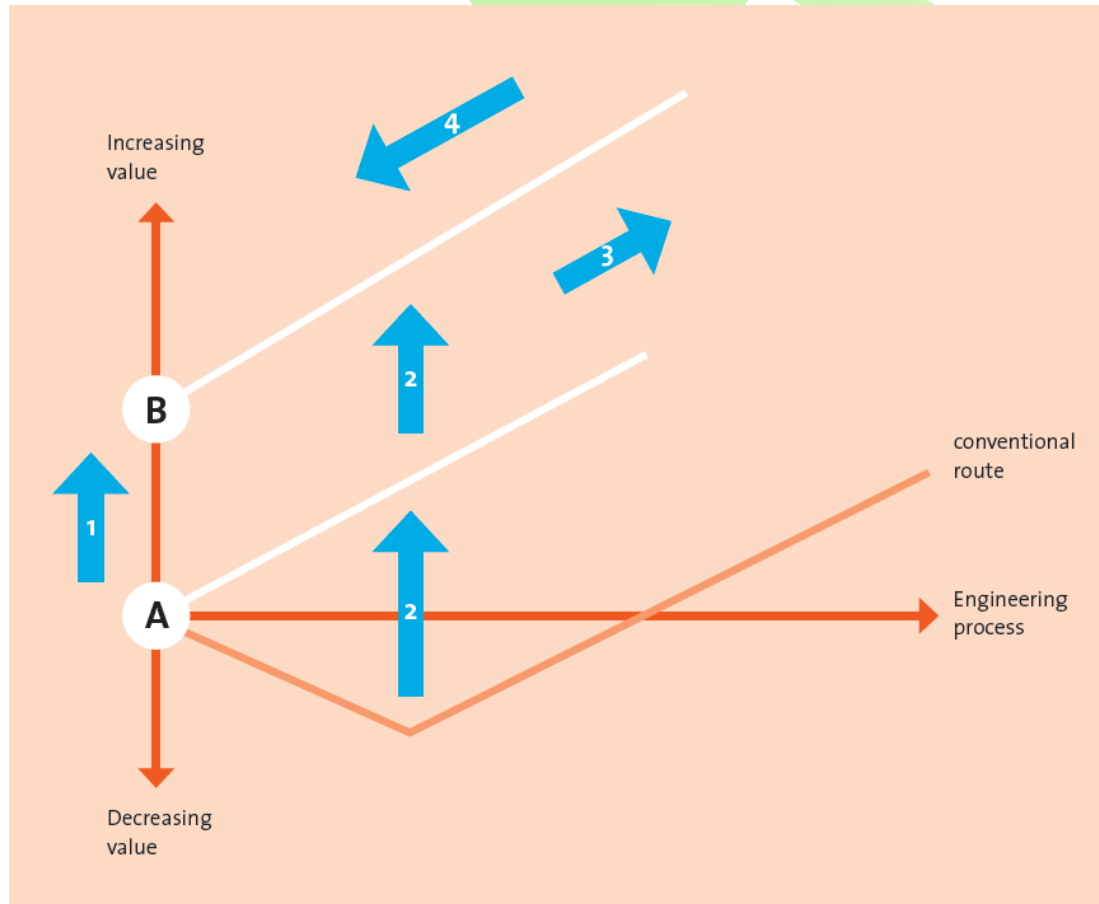
February 2016



December 2016

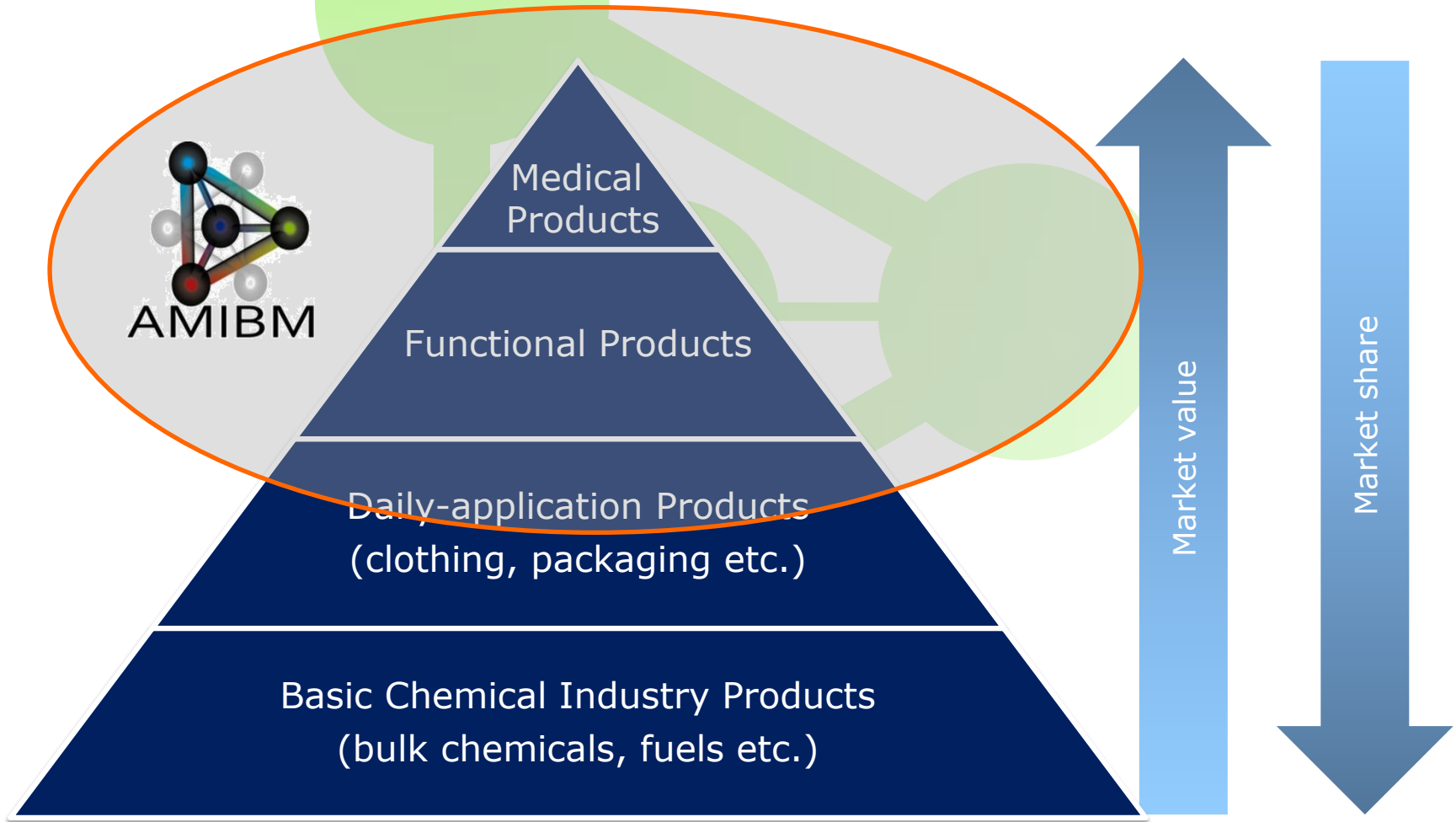


The paradigm shift towards biobased materials



- (1) Higher value chemical building blocks of biological origin and energy efficient bioproduction
- (2) Direct chemical upgrading
- (3) Novel materials fabrication technologies for efficient production of complex (bio inspired) high performance structures
- (4) Closing the cycle from manufacturing to regeneration

Focus AMIBM on functionality



AMIBM facts & figures

Official start at 1st of January 2016

- 5 professors
- 57 employees
- International Scientific Advisory Board
- 1,500 m² state of the art lab facilities
- € 1.7 Million 3rd party funding raised
- 12 peer reviewed publications 2016
- 2016 ABC-Conference fully booked

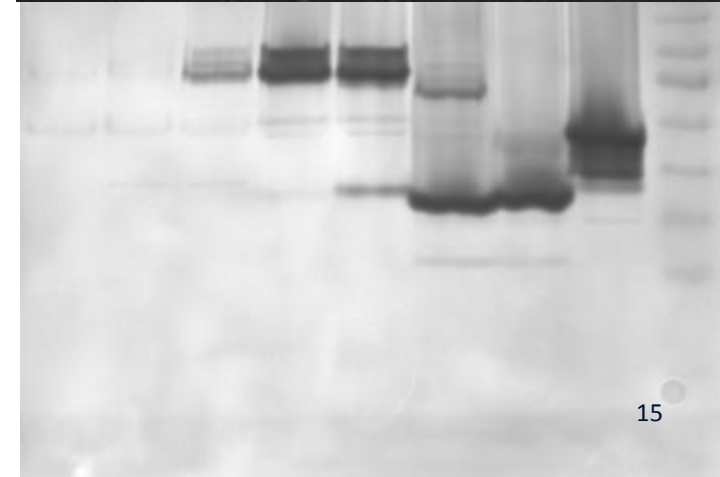
Scientific Board AMIBM





Enzymatic conversion of Chitin into Chitosan

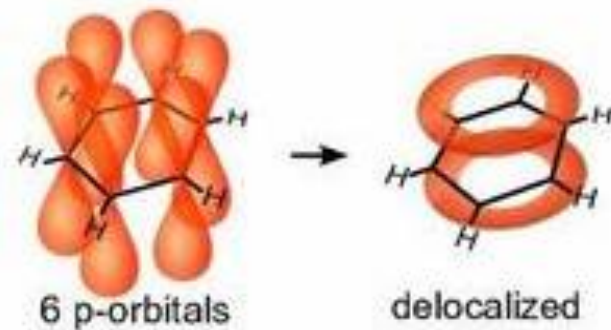
- Crab shells: food industry waste containing chitin
- Bacterial strain „Chi5“ is able to degrade chitin
- Development of „Chi 5“ enzymes to target conversion from chitin to chitosan





New biobased building blocks

- Biobased aromates: winning *twin brothers* of blockbusting benzenic monomers? (~50 MioT/a production)
- Exclusive aromates in the materials world
- Thought and designed to bring extra functionality in fibers and coatings

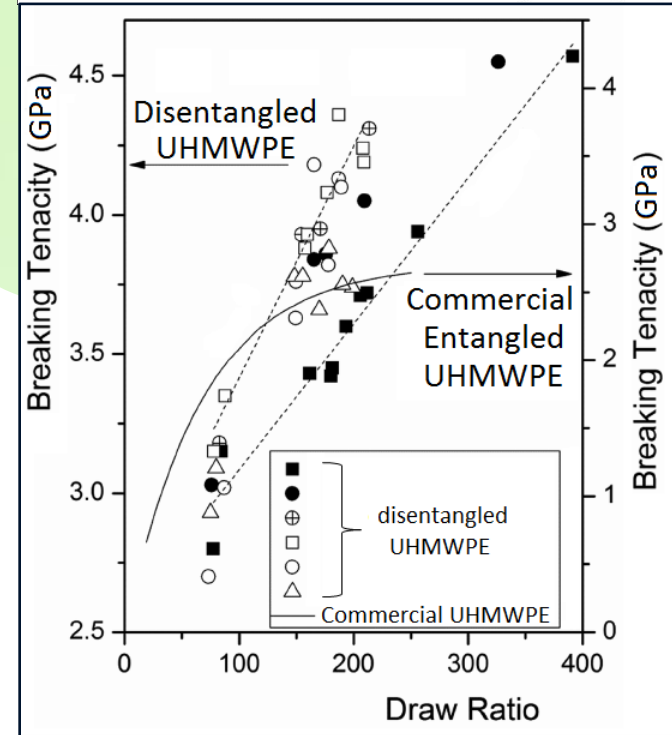
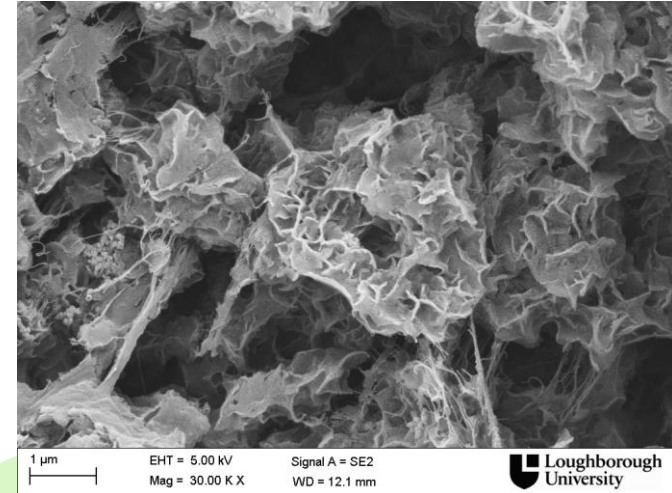


100 μm



Tailoring entangled state for ultimate performance

- Unique control over synthesis, entanglement density and crystal morphology of PE
- Resulting in excellent properties like ultra high breaking tenacity
- Extending the knowledge to Biobased Polymers



Biobased polymers

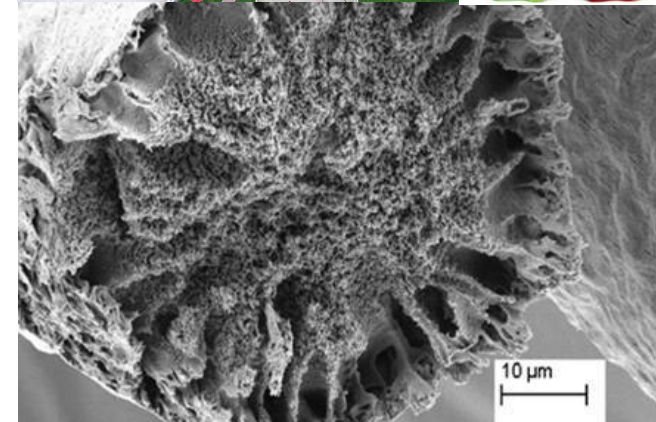
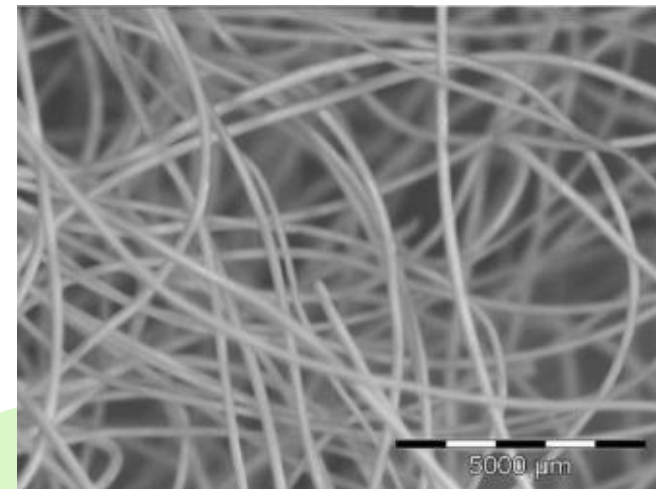
- Poly Lactic Acid
- Poly Hydroxy Alkanoates





Cellulosic Aerogel Fibres

- First Aerogel Fibres together with ITA and DLR
- Density 5% of Polyester, Surface 2000 m²/g
- Thermal Super Insulator 0.01 W/(mK)
- Enormous Noise Absorption > 40 dB





Making biodegradable Polymers more suitable for Medical Use

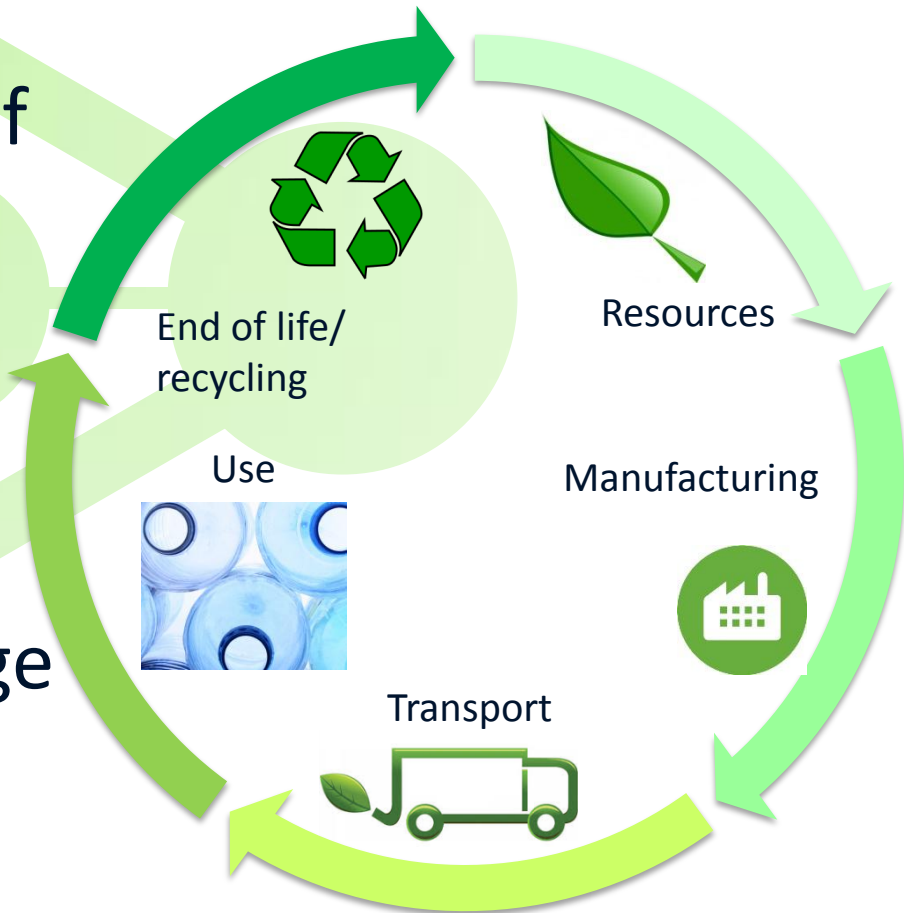
- State of the art materials lack specialised properties for medical use!
- Biodegradable (biobased) polymers are essential biomaterials in medicine
- Developing strategies for pH-neutral degradation in human body





Sustainability of Biobased Materials

- Life Cycle Assessment of biobased materials
- Sustainability evaluations integrated in R&D
- Addressing the challenge of closing the loops: biobased materials in a circular economy





Master Biobased Materials



Teaching strategy matches research lines:

Biology

- * Biomass
- * Biotechnology
- * Biobased Building Blocks

Chemistry

- * Processing
- * Modification
- * Upgrading

Materials Science

- * Manufacturing
- * Material Properties
- * Testing

Application

- * Sustainability
- * Industry
- * Society

Thank you for your attention!

