



## Results...

...material and product demonstration based on industrial needs.

...preliminary evaluation of the business opportunities for novel carbon materials and feasibility and techno-economical evaluation of processes.

...road-map for the continuation of work in this field.

### Project partners and contact persons

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### Industrial Advisory Board (IAB) members

1st May 2014

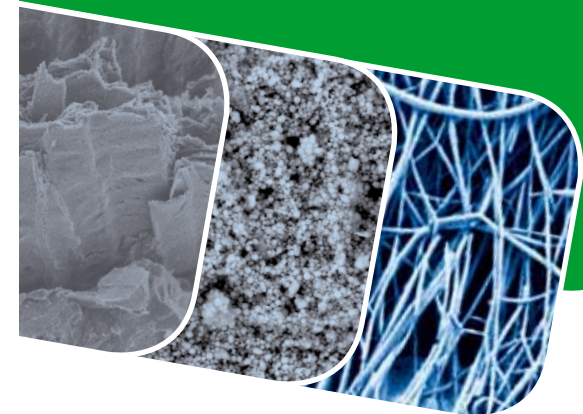
- Carbodeon Ltd Oy (FI)
- Elastopoli (FI)
- Kemira Oyj (FI)
- Metsä Fibre Oy (FI)
- Patria Aerostructures Oy (FI)
- Premix Oy (FI)
- Stora Enso Oyj (FI)
- Valmet Power Oy (FI)
  
- BYD (CN)
- Dienes Apparatebau GmbH (DE)
- New Zealand Forest Research Institute Limited – Scion (NZ)
- SunCoal Industries GmbH (DE)
- SGL Carbon GmbH (DE)

<http://bioprecarb.vtt.fi>



# Future with bio-based carbon

Bio-Based Tailored **Pre**ursors  
for Advanced **Carb**ons and Applications



Project type: Small strategic research opening  
Duration: 6/2013 – 6/2015



Tampere University of Technology

Tekes





### Purpose...

...to survey technological possibilities to obtain bio-based carbon business in Finland.

### Focus...

...new tailored carbon materials based on the industrial needs.

...use of bio-based polymers as raw materials for solid tailor-made preformed precursors which can be carbonized into novel carbon materials.

### Possibility to...

...produce tailored novel functional carbons instead of traditional carbons.

...replace other materials with tailored carbons.  
...found new processing routes to obtain novel carbon materials.

## APPLICATIONS FIELDS

- Composites
- Tribology and water lubrication
- Filter and membranes
- Capacitive desalination
- Gas storage
- Catalyst carriers
- Electrodes for supercapacitors and batteries

# TAILORED CARBONS

## MATERIALS

Biobased polymers from wood and biomasses

- Cellulose
- Hemicellulose
- Lignin
- ... abundant, renewable materials

## CARBONIZATION

Different carbonization and further heat treatments to produce different kind of carbons

- Carbonization in inert gas at high temperature
- Hydrothermal carbonization (HTC)

Add functionality in heat treatments

- Graphitization
- Activation

## PRECURSOR TYPES

Various technologies with possibility to produce different shapes and sizes

- 0D - Particles
- 1D - Fibres
- 2D - Films and fabrics
- 3D - Foams

