



# CO<sub>2</sub>-Recycling and Biopolymers

## ACIB HAS DEVELOPED

two independent methods using the greenhouse gas CO<sub>2</sub> for production of biopolymers. This allows the environmentally friendly production of bio-based and biodegradable natural polymers.

## BACKGROUND

Polyhydroxyalkanoates (PHA) have become very popular as they are bio-based, bio-degradable natural polymers which are UV-stable, able to withstand higher temperatures, showing good resistance to moisture and providing a good barrier for aroma compounds, making them an ideal packaging material. In addition, they can also be used for high-value applications such as biodegradable solutions for slow-release fertilizers, pharmaceuticals in general, as well as degradable human implants. Currently more than 30,000 metric tons are produced annually with traditional technology using mainly (food/feedstock) sugars or oils as substrates.

## TECHNOLOGY

acib uses a highly sophisticated strain of cyanobacteria which is able to productively grow in a photobioreactor without sugars or oil using light and CO<sub>2</sub> to generate PHA (TRL 5 – Technology validated in relevant environment). acib has further developed a technology using the bacterium *Ralstonia eutropha* (aka *Cupriavidus necator*) able to use H<sub>2</sub> (e.g. from electrolysis of water using excess of electric energy) and CO<sub>2</sub> (TRL 4 – Technology validated in lab).

High quality PHA produced by valorisation of the greenhouse gas CO<sub>2</sub> is already possible with acib's technology. We now strive to conduct further optimizations to beat current production costs.



Foto: www.pikabay.com

## OUR OFFER

acib seeks investors and industrial partners to develop this technology to commercial scale. Under protection of a CDA/NDA we provide you with details on advanced biopolymer productions. Any IP developed in a joint project would fully belong to the investor/industrial partner.

## EXPERTS

Prof. Dr. Helmut Schwab  
Prof. Dr. Georg Gübitz  
Prof. Dr. Robert Kourist

## AVAILABLE FOR

- Joint Research Project
- Contract Research
- Investment

## DEVELOPMENT STATUS

Technology Readiness Level 4-5

## IPR

Will be generated for our industrial partner / investor

## KEYWORDS

- CO<sub>2</sub>-Recycling
- PHA
- Biopolymer
- Bio-based
- Bio-degradable
- Cyanobacteria
- *Ralstonia eutropha*

## CONTACT

acib GmbH, Petersgasse 14, 8010 Graz

☎ +43 316 873 9316

✉ [bd@acib.at](mailto:bd@acib.at)

🌐 [www.acib.at](http://www.acib.at)