UNIVERSITÄT
LEIPZIG

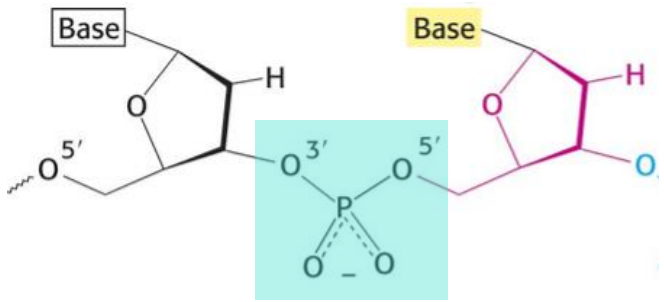
Biologisches Recycling von Polyester-Kunststoffen

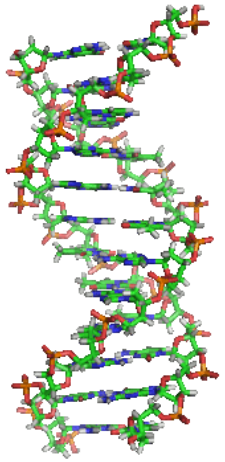
Naturschutz meets Biotechnologie
NABU Online Talk

Christian Sonnendecker
08-05-2023

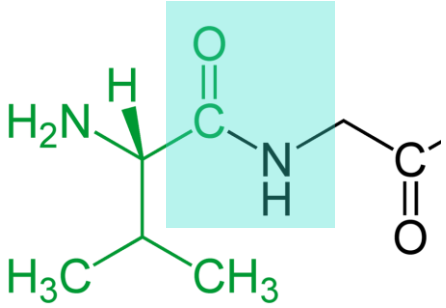
Die Natur macht es vor

DNA



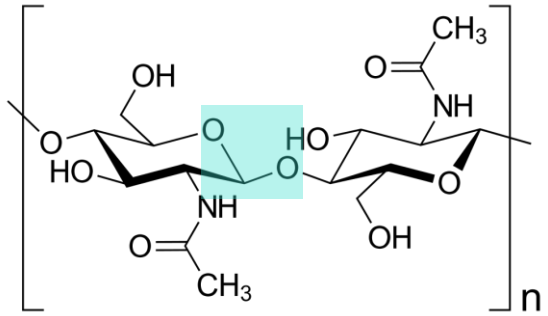


Proteine

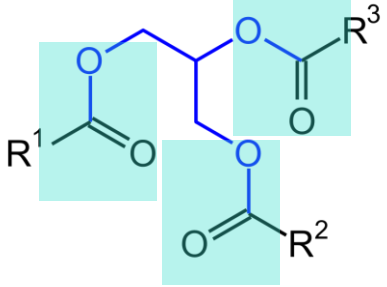


Enzyme

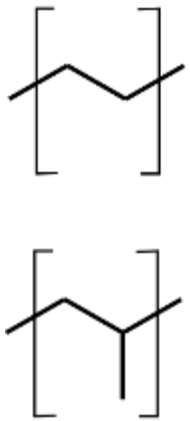
Kohlenhydrate



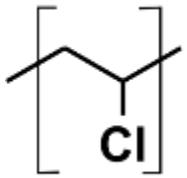
Fette



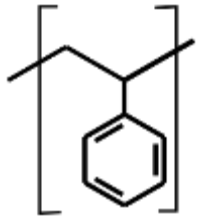
Fossile Kunststoffe haben oft keine Sollbruchstelle



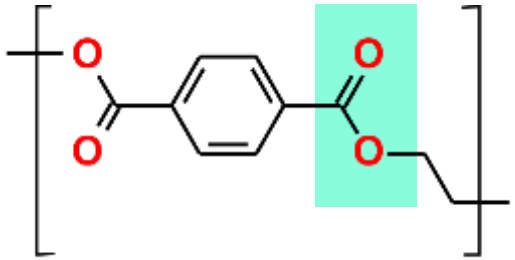
Polyolefins
(PE and PP)



Polyvinyl
chloride
(PVC)

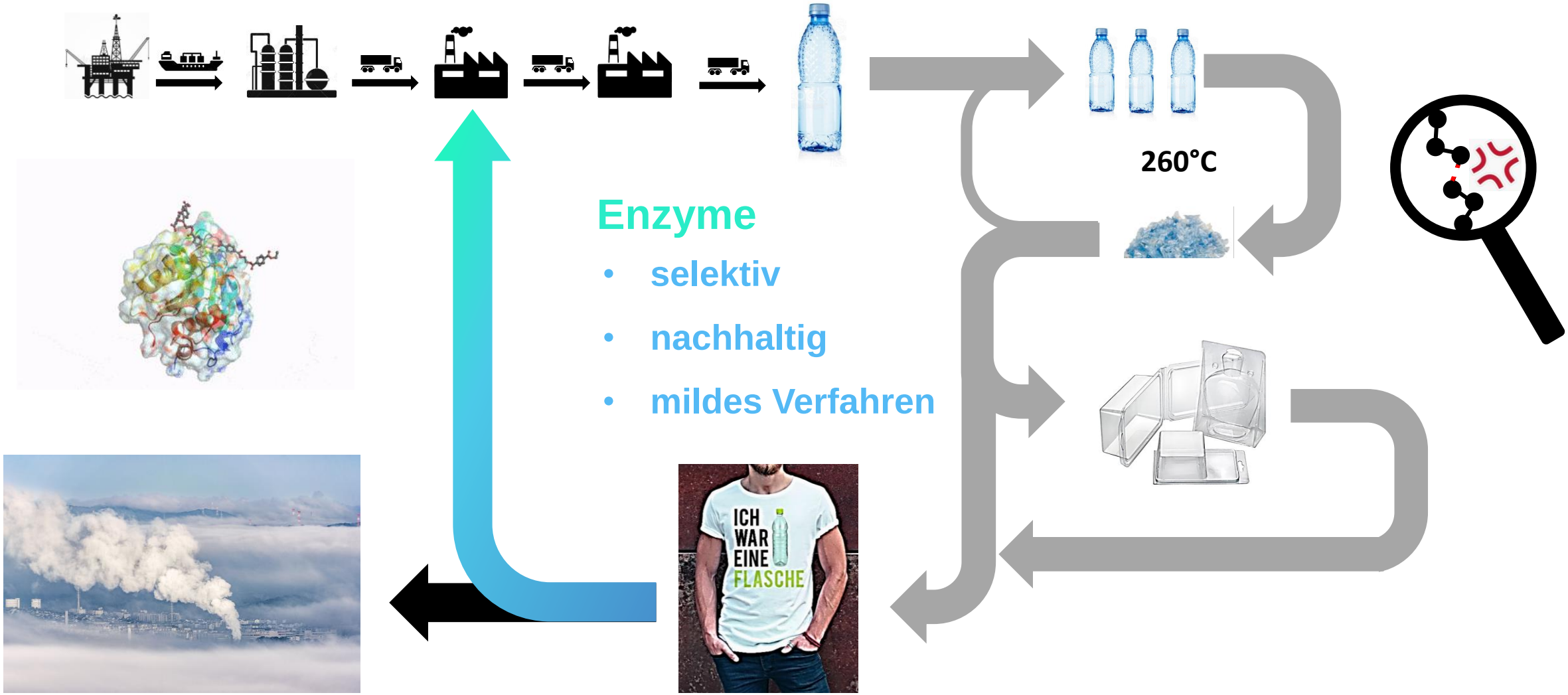


Polystyrene
(PS)

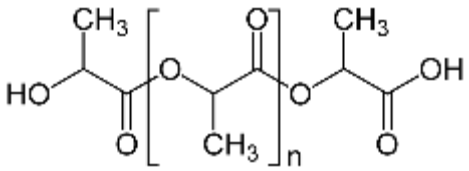


Polyethylene
terephthalate
(PET)

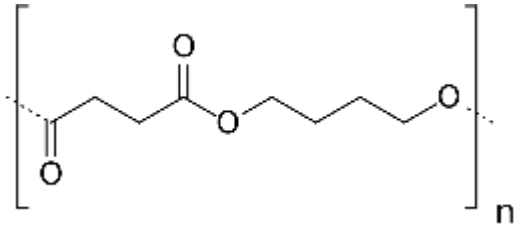
Fossile Kunststoffe und deren Recycling



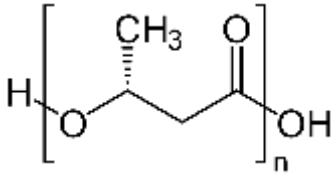
Biokunststoffe



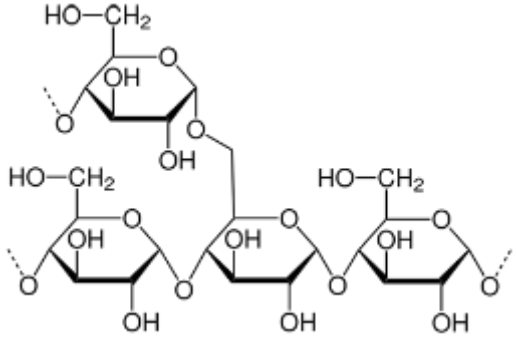
Polylactic acid (PLA)



Polybutylene succinate (PBS)



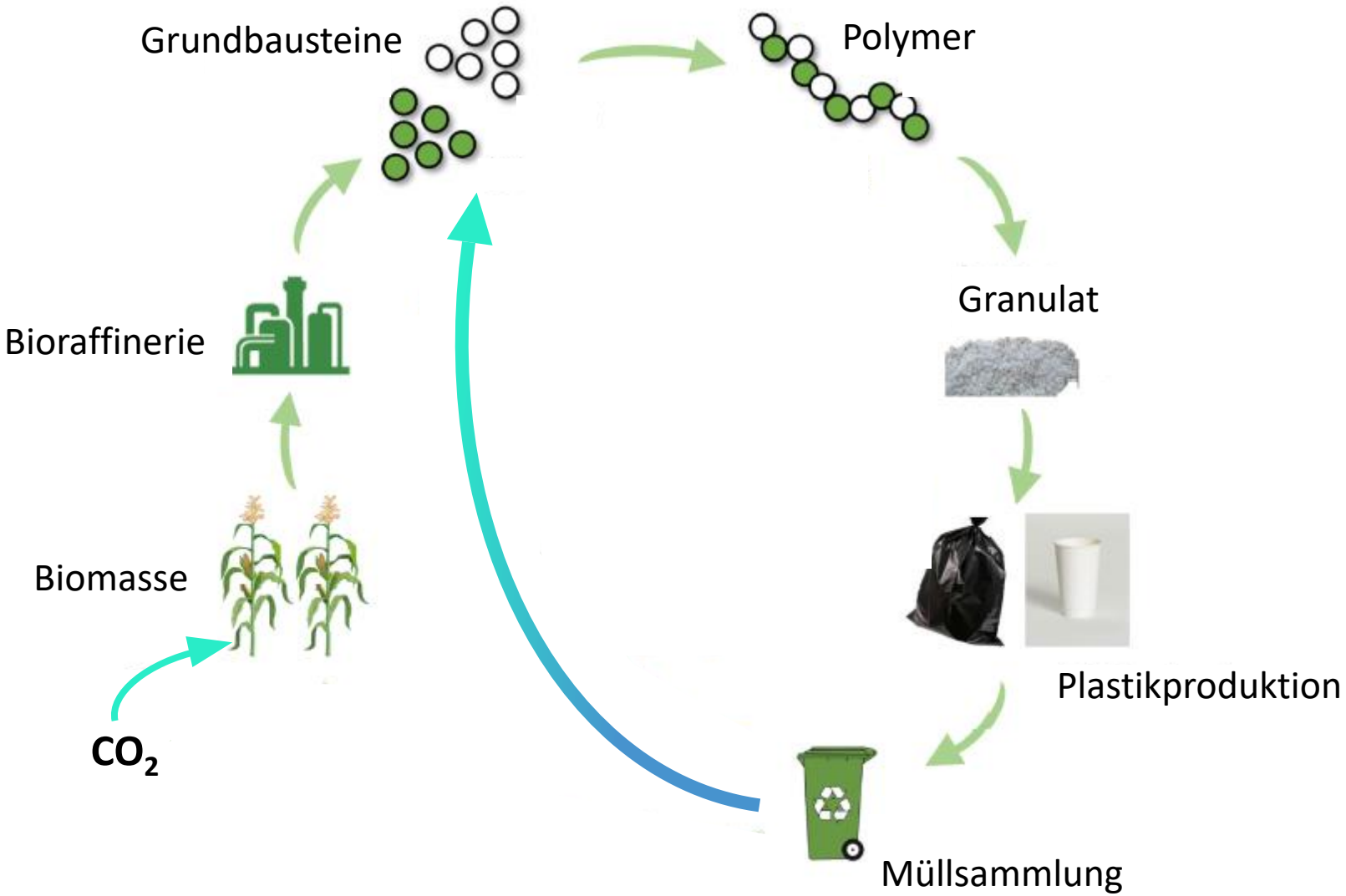
Polyhydroxy alkanoates (PHA)



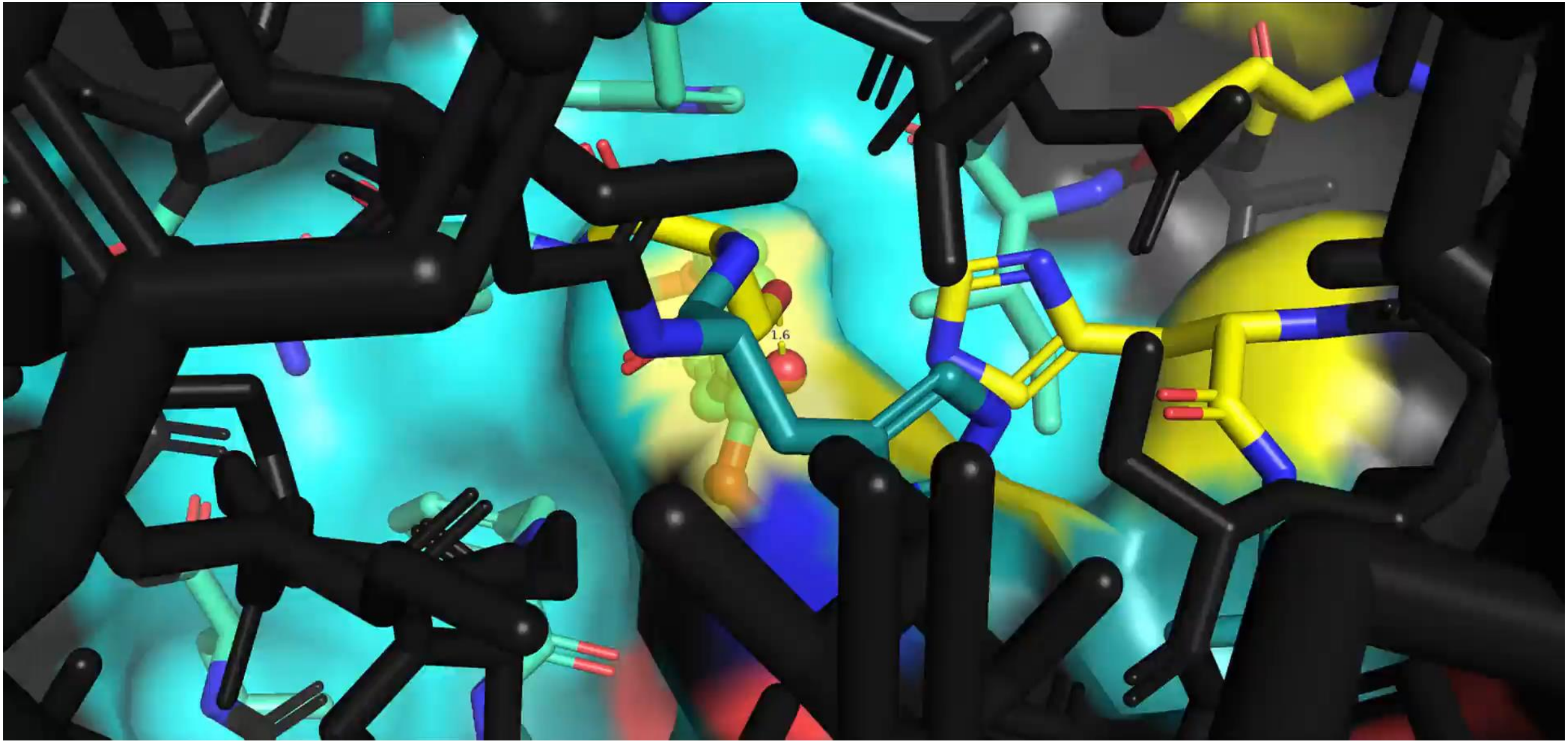
Starch blends

- oft aus Nahrungsmitteln hergestellt
- mitunter schwer biologisch abbaubar
- kontaminiert Plastik-Recycling

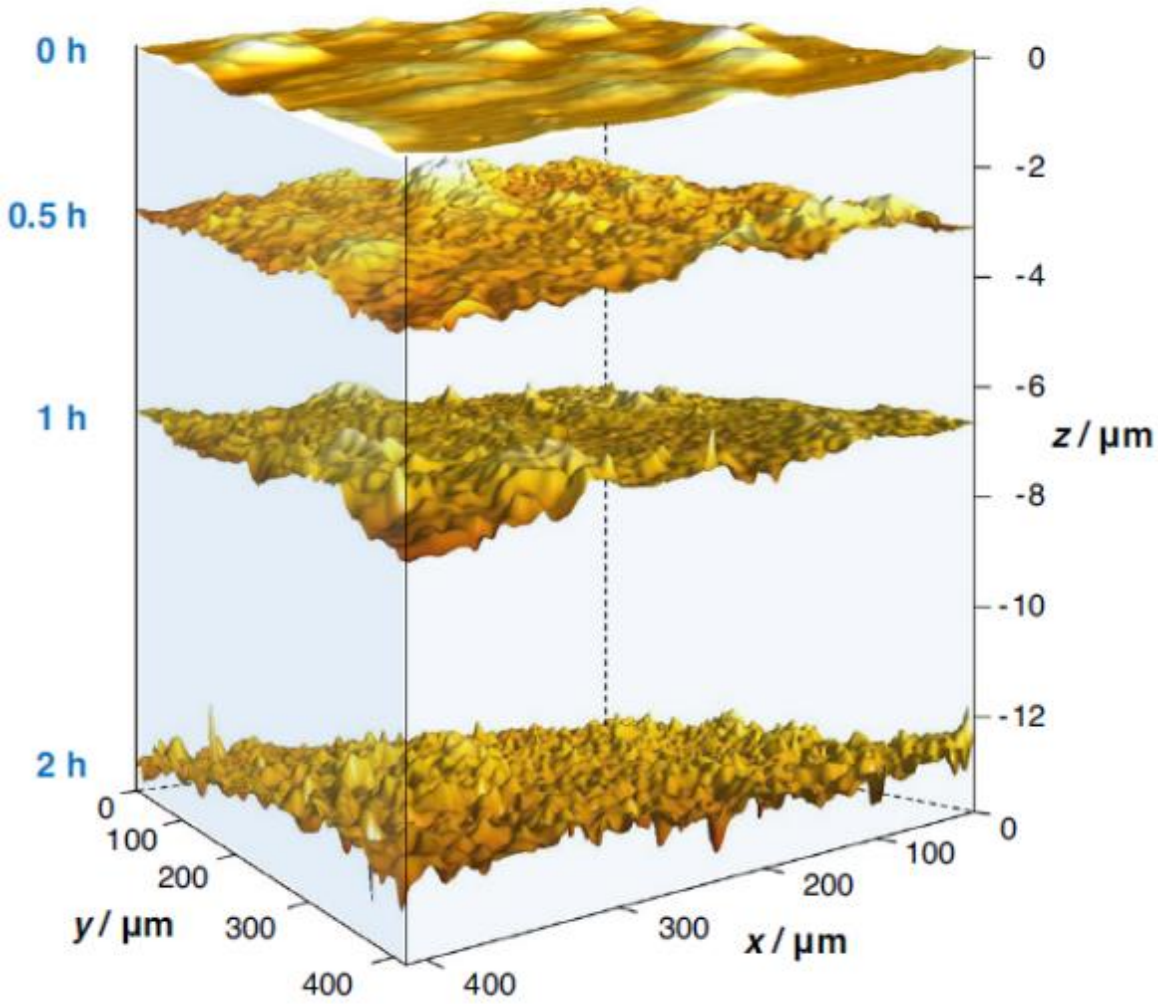
Biokunststoffe und ihr Stoffkreislauf

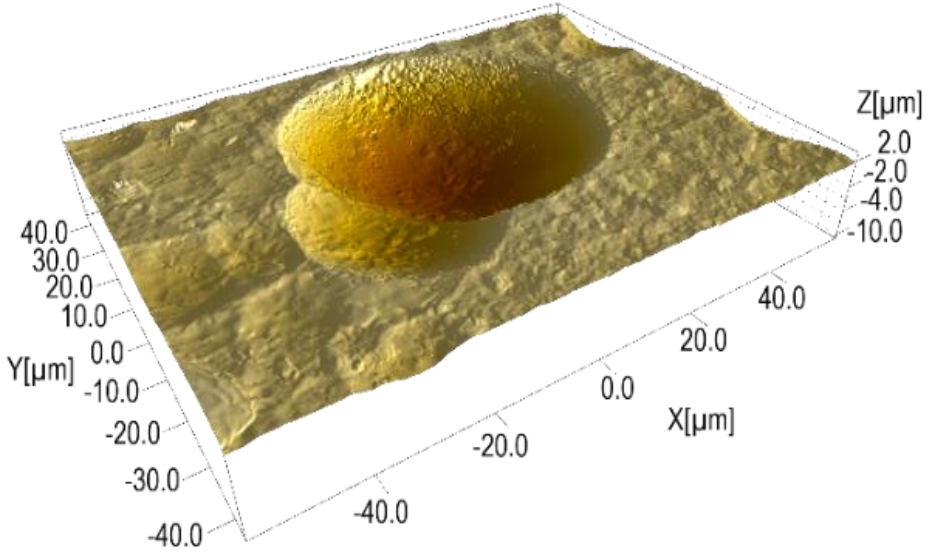


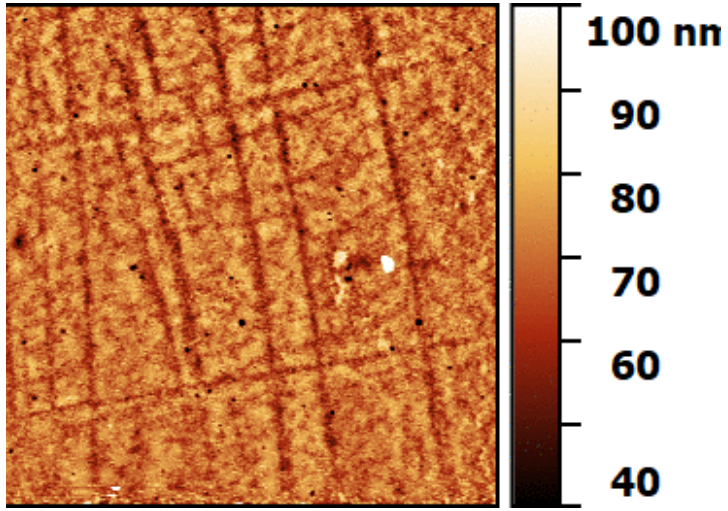
Werfen wir einen Blick ins Enzym



Der Abbau erfolgt über eine Oberflächen-Erosion



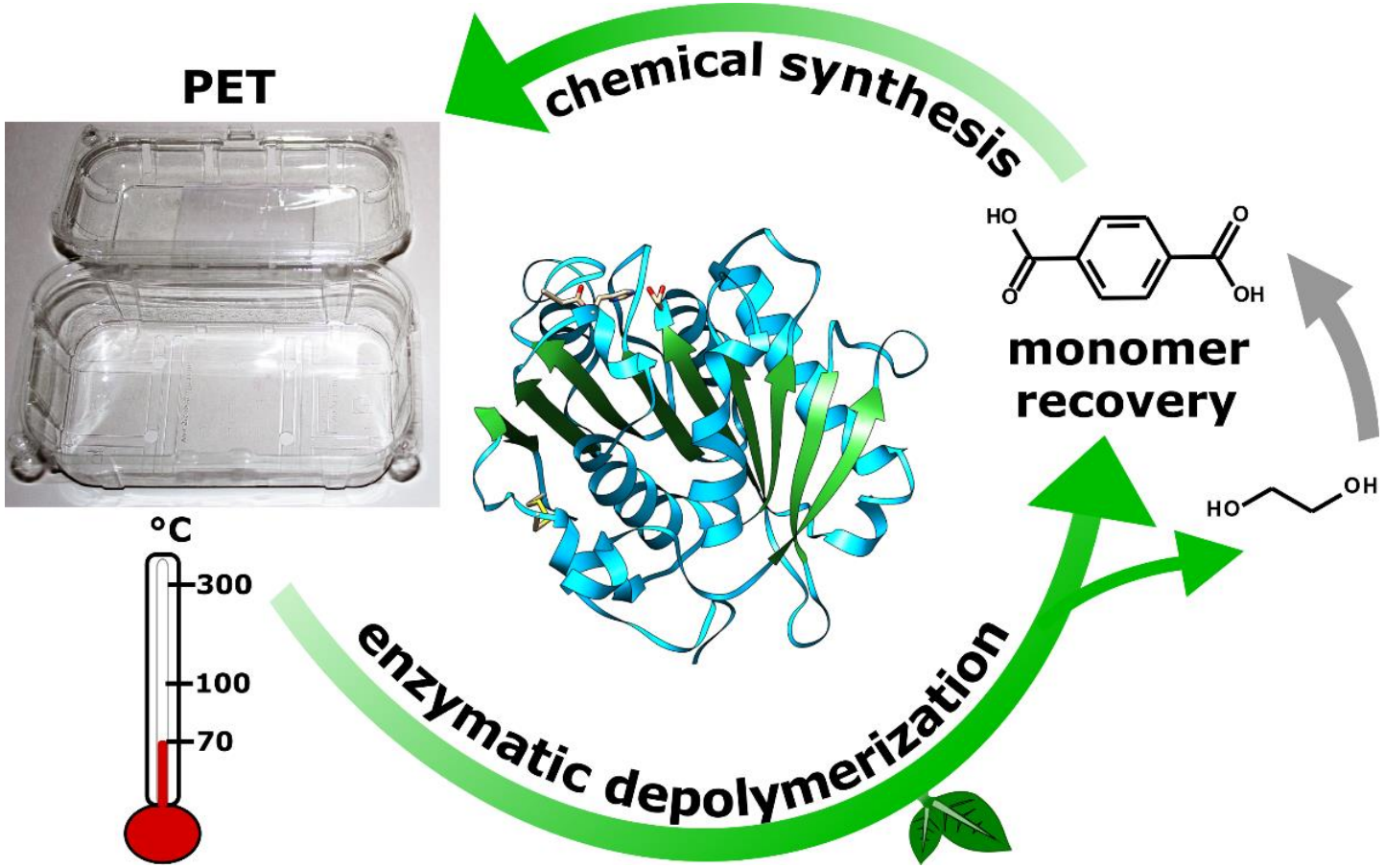


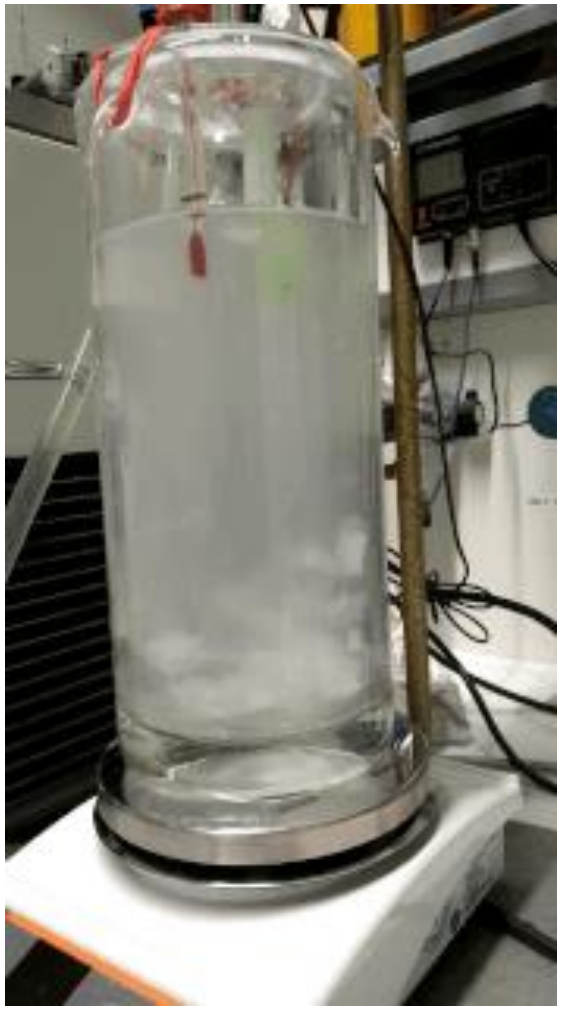


AFM, 5 min/frame

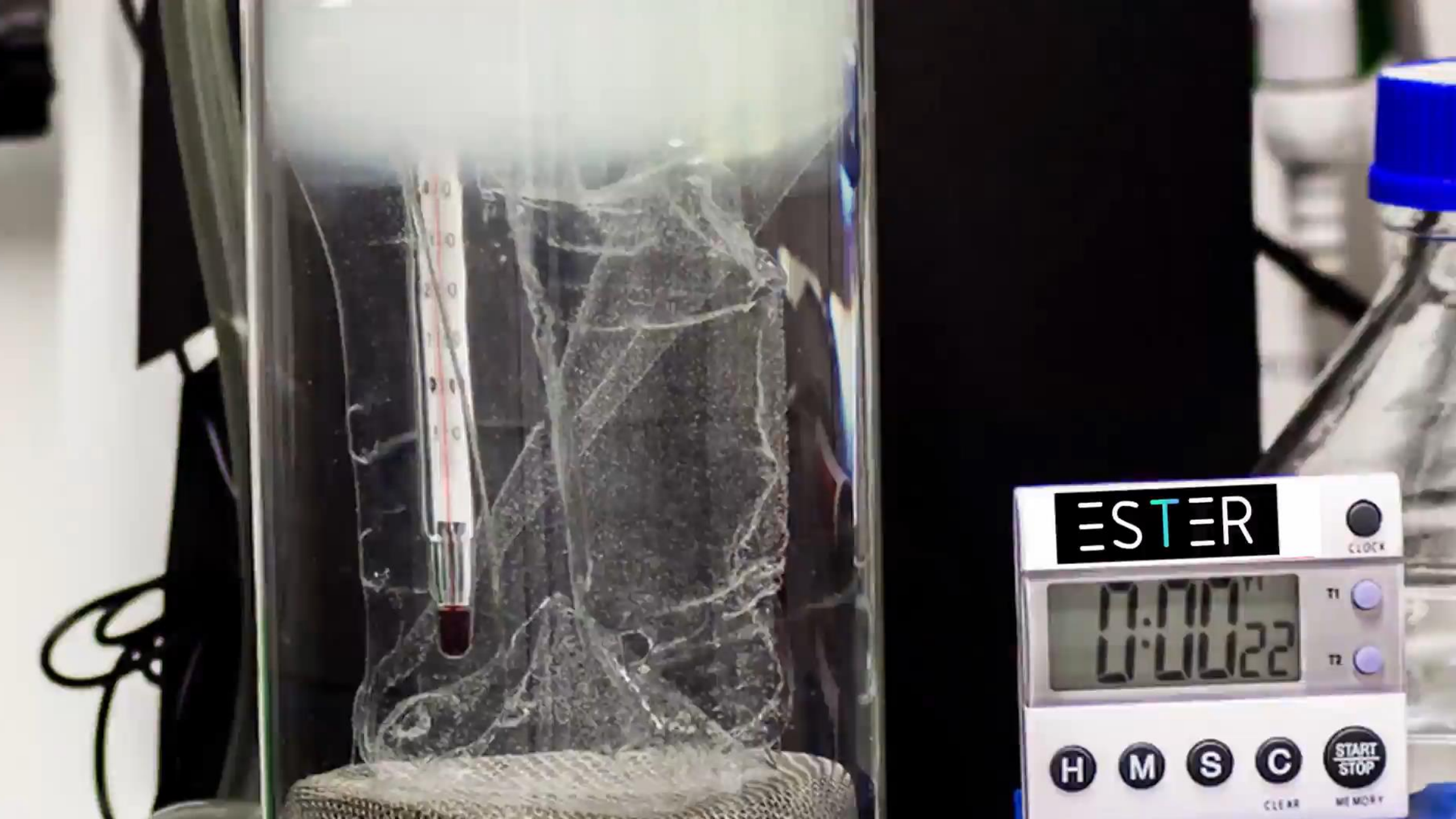
Lippold, H *et al*. *npj Mater Degrad* **6**, 93 (2022)

Ein geschlossener Kreislauf für PET





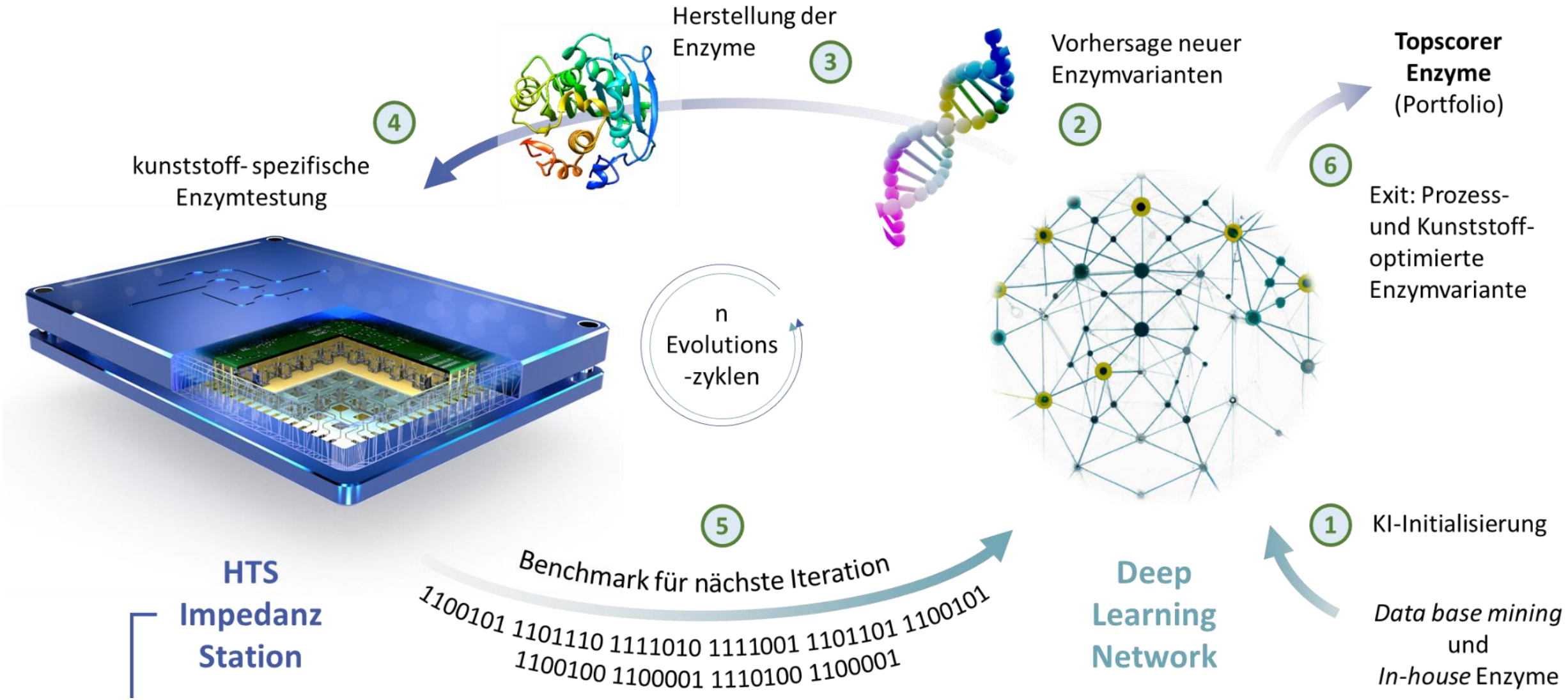
Sonnendecker et al. (2022) ChemSusChem2022, 15, e202101062)


ESTER
CLOCK
T1
T2
H
M
S
C
START
STOP
CLEAR
MEMORY

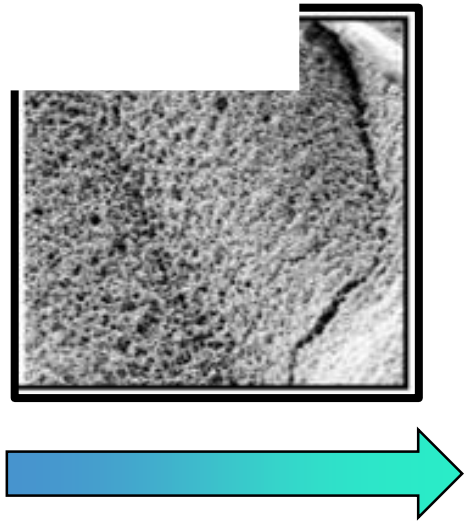
Elektrochemische Analyseplattform

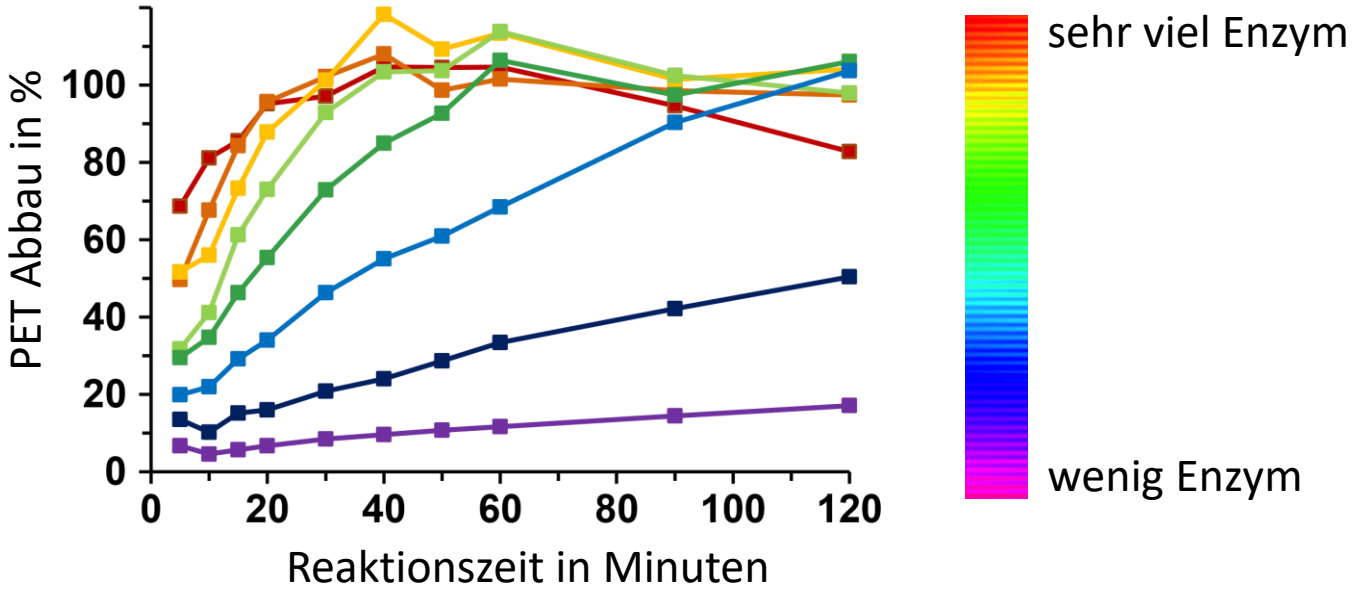
[redacted]

Proteinengineering mit künstlicher Intelligenz



Vorbehandlungsverfahren...auf Turbo





UNIVERSITÄT LEIPZIG

enzycle

MOPLACE

BBI JU

ERA CoBioTech

Bio-based Industries Consortium

Horizon 2020
European Union Funding
for Research & Innovation

ESTER BIOTECH

SOLVING FRONTIERS

Europäische Union

Europa fördert Sachsen.
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