The vision of CO2PERATE

Training of young European researchers in the synthesis of indispensable molecules from sustainable carbon sources and with sustainable catalysts. This will involve development of novel and industrially relevant methods for employing CO₂ as a carbon synthon, alongside other renewable biomass, catalyzed by non-precious metals. The main focus is on C-C bond formation with CO₂, which is an important but insufficiently developed area.

Carbon forms the backbone of all organic compounds and organic molecules present in numerous products including gasoline and natural gas, plastics, detergents, dyes, food additives and medicines. The typical starting materials for the industrial synthesis of these compounds are fossil fuels. The potential environmental and economic benefits of using CO₂ as a feedstock have been known for decades. However, few industrial processes have been successful. The strong bonds in CO₂ are not particularly reactive, requiring significant energy and harsh catalysts and conditions that result in large greenhouse gas footprints. CO2PERATE is developing processes using CO₂ and biomass as starting materials and non-precious metal catalysts. Their goal is the sustainable CO₂-based synthesis of numerous chemicals for industrial and pharmaceutical applications.

CONSORTIA

Training of young European researchers in the synthesis of indispensable molecules from sustainable carbon sources and with sustainable catalysts. This will involve development of novel and industrially relevant methods for employing CO₂ as a carbon synthon, alongside other renewable biomass, catalyzed by non-precious metals. The main focus is on C-C bond formation with CO₂, which is an important but insufficiently developed area.

Sustainable synthesis of indispensable organic molecules such as pharmaceuticals via C–C bonding between CO₂ and sustainable biomass-derived starting materials, catalyzed by abundant metals (M).