

Recycling of wastewater and low quality mineral building waste with the help of bio-cementation for use as aggregate in structural resource efficient concrete (R3C2)

Initiative: Zirkularität mit recycelten und biogenen Rohstoffen

Ausschreibung: Kooperationsprojekte

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Despite a high nominal recycling rate of around 78% there is still a huge amount of mineral waste (around 13 million tons yearly in Germany) coming from demolition of buildings. Especially low-quality mineral waste of demolition rubble is still landfilled, i.e. demolished plaster, mortar and masonry. The main goal of this project is a circular approach for low-quality mineral waste with the help of microbially induced calcite precipitation (MICP). The MICP method produces limestone and closes porous surfaces what makes these aggregates usable for the production of structural concrete. The cultivating process for the involved bacteria will be optimized so that waste water from the nutrition industry can be used. Besides, micro and nano particles coming from low-quality mineral waste will be activated by thermal and mechanical treatments to be used as substitution for cement in concrete. By using two different waste materials (wastewater and low-quality mineral demolition waste) in different ways for the production of structural concrete the material loop will be improved dramatically.

Projektbeteiligte

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