

Capture and mineralisation of CO₂, while recycling concrete

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As the effects of CO₂ become increasingly apparent and sustainability comes more into focus, it has become clear that many parallel approaches are needed. Some focus on decreasing carbon emission by new industrial approaches, others develop methods to remove CO₂ from the air. We are working on a way to do both simultaneously. Our goal is to react waste building materials (e.g. concrete, stone wool) with CO₂ to produce a new material that can be used as a low CO₂ footprint component in concrete. A point here is that CO₂ is both captured AND mineralised, not just stored, at risk of returning in the future. We see possibilities for point source capture, locally, at factory chimneys, where CO₂ input could range up to 10 to 15 %. We have designed and built a laboratory prototype for an industrial reactor, that consists of a reaction chamber and a carbonation chamber. Currently the reactors are 20 L but this will be scaled up to 300 L in the next research stage. Results are promising. The end product solid has a composition and grain size that fit the needs for a concrete additive.