The Strategic University Steel Technology and Innovation Network Presents

Task 1: Carbon conversion

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SUSTAIN

Future Steel Manufacturing Research Hub

EPSRC

Engineering and Physical Sciences Research Council

ESRI

Changing the future

- Sustain can enable **carbon-neutral steelmaking** by changing the way CO_2 is considered from a waste to a feedstock.

Creating a CO_2 value chain

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Manufacturing industry

Direct Air Capture

Steel industry

Cement Industry

Power stations

CO_2

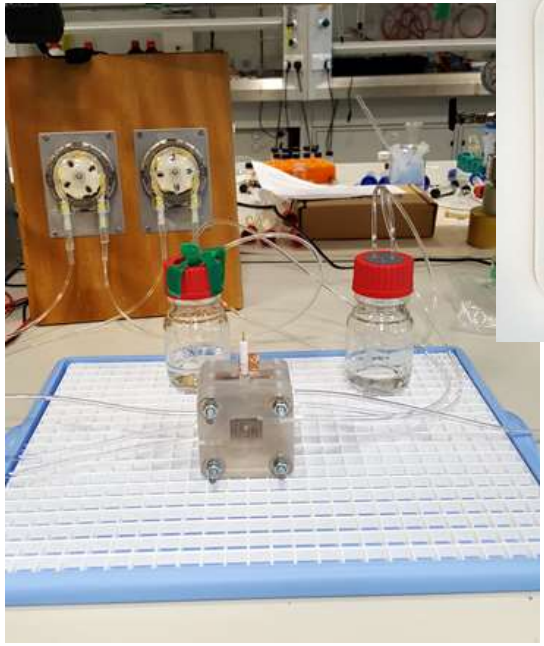
Sustainable Commodity Chemicals

CO_2 capture and utilisation

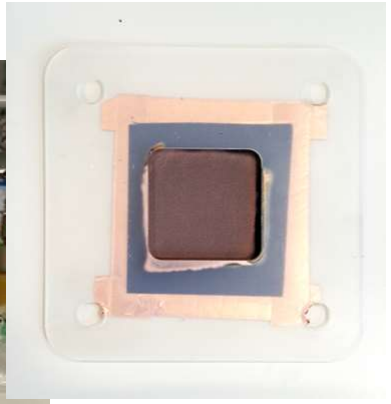
- High efficiency **carbon capture** can recover CO_2 from complex steel works process gasses
- Catalytic **carbon dioxide conversion** can offset the cost of carbon capture

PSA unit

HTP reactor



CO_2 electrolyser



GDE

CO_2-derived added-value products

Ethylene - C_2H_4

Global production: 150 Mt/y

$$CO_2 \xrightarrow[\text{Catalyst}]{\text{Energy + H}} C_2H_4$$

500 Mt/y → 150 Mt/y

1.3% Global CO_2

The University Of Sheffield.

EPSRC

Engineering and Physical Sciences Research Council

Swansea University
Prifysgol Abertawe

WMG
THE UNIVERSITY OF WARWICK

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BRITISH STEEL

CELSA GROUP | CELSA STEEL UK

SHEFFIELD FORGEMASTERS INTERNATIONAL

LIBERTY STEEL

TATA STEEL