

ANNEX

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1) Format of the abstract

Innovative application of chemical-looping technology for CO₂ reduction, recycle and removal

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A smart approach for CO₂ reduction, recycle, and removal that integrates chemical looping conversion technology with CO₂ reforming and mineralization processes to realize a Carbon Neutral circular society is introduced. Chemical looping combustion has an advantage of separating CO₂ inherently and thus does not need a CO₂ separation step. Biomass, a natural CO₂ DAC process, is combusted by chemical looping combustion process producing highly concentrated CO₂ and power. The pure and concentrated CO₂ may be used as a feedstock for carbon neutral chemicals production by FT-synthesis process via rWGS reaction for carbon recycling. The concentrated CO₂ can also be permanently removed from the atmosphere by carbon mineralization process.

