

# Liberate

CE-SPIRE-02-2018

propylaric acid from cyclohexanol to deliver a range of biosustainable feedstocks for drop in replacements or for superior product performance.

Concept:

Liberate will deliver a pilot scale electrochemical plant to demonstrate the commercial opportunities of converting low cost lignin feedstocks in high value biosustainable chemicals. Liberate will model and physically integrate renewable energy sources to deliver a process that is capable of synthesising chemicals with zero CO<sub>2</sub>. The renewable energy integration will open up new business models for biorefinery operators to utilise peak renewable energy at discounted rates. Liberate will deliver the following benefits: • An electrochemical depolymerisation of kraft lignin to synthesise vanillin with a 7% yield. • An electrochemical depolymerisation of organosolv lignin to synthesise mixed phenolic derivate oligomers with a yield of > 35% • An electrochemical oxidation of

biosustainable cyclohexanol to synthesise proyl  
adipic acid with a yield of up to 80%. • A  
biorefinery process capable of accommodating  
RES fluctuations without loss in efficiency • A  
biorefinery process that exhibits a 95%  
improvement in the energy efficiency of the  
process • A biorefinery process that is capable of  
producing 29times less CO<sub>2</sub>

Start date:

01/10/2018

End date:

30/09/2022

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