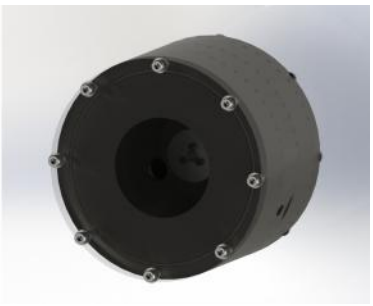
PROJECT NUMBER

**20069**

# Novel cylindrical acoustic reactor providing improved sonochemical efficiency and greener chemistry

Sonochemistry uses ultrasound to generate rapidly expanding and contracting bubbles (cavitation), facilitating chemical reactions. This new cylindrical reactor allows sonochemistry to be scaled to industrial levels, paving the way for a greener approach to chemical reactions.

**Applications:** CO2 Reduction Reactions, Nitrogen Fixation, Hydrogen Production, Advanced Oxidation Processes, Selective Oxidation Reactions



| Features | Benefits |
| --- | --- |
| Cylindrical ultrasound transducer allows ultrasound waves to be controlled and focused on a given region of the reaction volume | Spatial and temporal control over the nucleation of high energy bubbes – the driving force of sonochemical reactions |
| Novel reactor design allows a massive gain in acoustic power locally within a controllable volume | Greener than current sonochemical reactors as less electrical power is needed to generate cavitation |
| More than 100 times more efficient than conventional sonochemical reactors | Improved yields, specificity, and kinetics of sonochemical reactions |

| Features | Benefits |
| --- | --- |
| Can be operated in batch processing or continuous processing mode | Flexibility of use and allows sonochemical reactions to be scaled up to industrial scales |
| The degree of cavitation can be monitored in real time | Automated control of the ultrasound transducer to maintain desired cavitation properties |
| Can be used with cavitation-inducing agents (opportunity 20285) | Cavity-inducing agents further improve yields, specificity and reaction rates |

## Patented and Available for

- Co-development
- Consulting
- Licensing

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To find out more, contact enquiries@innovation.ox.ac.uk and quote the project number.