Ultrasonic Particle Engineering

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Prosonix Ltd

World leaders in the use of ultrasound in commercial scale process chemistry

Global customer base in pharmaceuticals, chemicals, minerals, energy

Based in Oxford UK the Prosonix Team consists of
- PhD Chemists, Chemical and Mechanical Engineers, Experienced BD professionals

Technology platform includes
- Award Winning CrystalGEM™ predictive crystallization
- Prosonitron™ reactors for sonocrystallization, sonoprocessing, & sonochemistry
- SAX™ Particle Engineering Technology for advanced pharmaceuticals

Key technology partnerships with world renowned experts
- Dr John Perkins and Sonic Systems
- Dr George Tranter and Chiralabs
- Dr Rob Price and University of Bath
- Professor Tim Mason, University of Coventry
- Professor Kevin Roberts, University of Leeds
- Scientific Update, Royal Society of Chemistry, National Physics Laboratory

Key license deals with UCB Pharma, Aughinish (Glencore), Alcoa World Alumina
Business Overview

Current Core Business

- CrystalGEM™
- Prosonitron™

Developing Business

- SAX™

Award Winning Predictive Crystallization Fee for Service

SonoLab™
- Collaborative R&D Services
- Licensing of process technology
- Equipment Supply
- Product Supply via Partner

Collaborative research and development agreements & Licensing of technology
- Product Supply
What is Sonoprocessing?

Ultrasound causes a pressure wave in solution
Cavitation caused by successive compression and rarefaction

Successive Growth Cycles
Bubble Collapse

Ultrasonic Mediated Cavitation Facilitates
- Nucleation and Crystallization Control
- Intense Mixing
- Solid/Liquid interactions
- Liquid/Liquid Interactions
- Process Intensification
Historic Engineering Limitations

Cavitational erosion has previously prohibited commercial use

Liquid jet penetrates bubble during asymmetric collapse

Damage to a solid caused by jet impact and emission of shock waves as a result of repetitive bubble implosions

- Probes have not been used for commercial scale production
- Prosonix has overcome these engineering limitations

30 hrs of non-continuous use
Cavitation Control
Prosonitron™ design focuses power towards the central flow

- Ultrasound generated at the transducers passes through the metal masses to enter the liquid at the tube walls.
- The sound waves propagate and focus power at the centre of the flow adjacent to the bonded front mass.

Cavitation Mapping Using NPL probe
UCB Pharma (Major Pharma)
- First demonstration of Prosonitron™ at pharma pilot scale
- License Agreement and broad collaboration deal
- Sonocrystallization control of shape, size and polymorph

Aughinish Alumina (Glencore)
- Worlds first continuous large scale Sonocrystallizer
- 2 years continuous operation in aggressive conditions
- Aids key impurity removal, increasing plant efficiency and capacity

Alcoa World Alumina (# 1 in Global Alumina)
- Second continuous Sonocrystallizer to worlds biggest alumina player
- Analogous application to AAL, potential at 8 other Alcoa refineries
For more information on the whole range of Prosonix products and services please visit

www.prosonix.co.uk