The University of Nottingham
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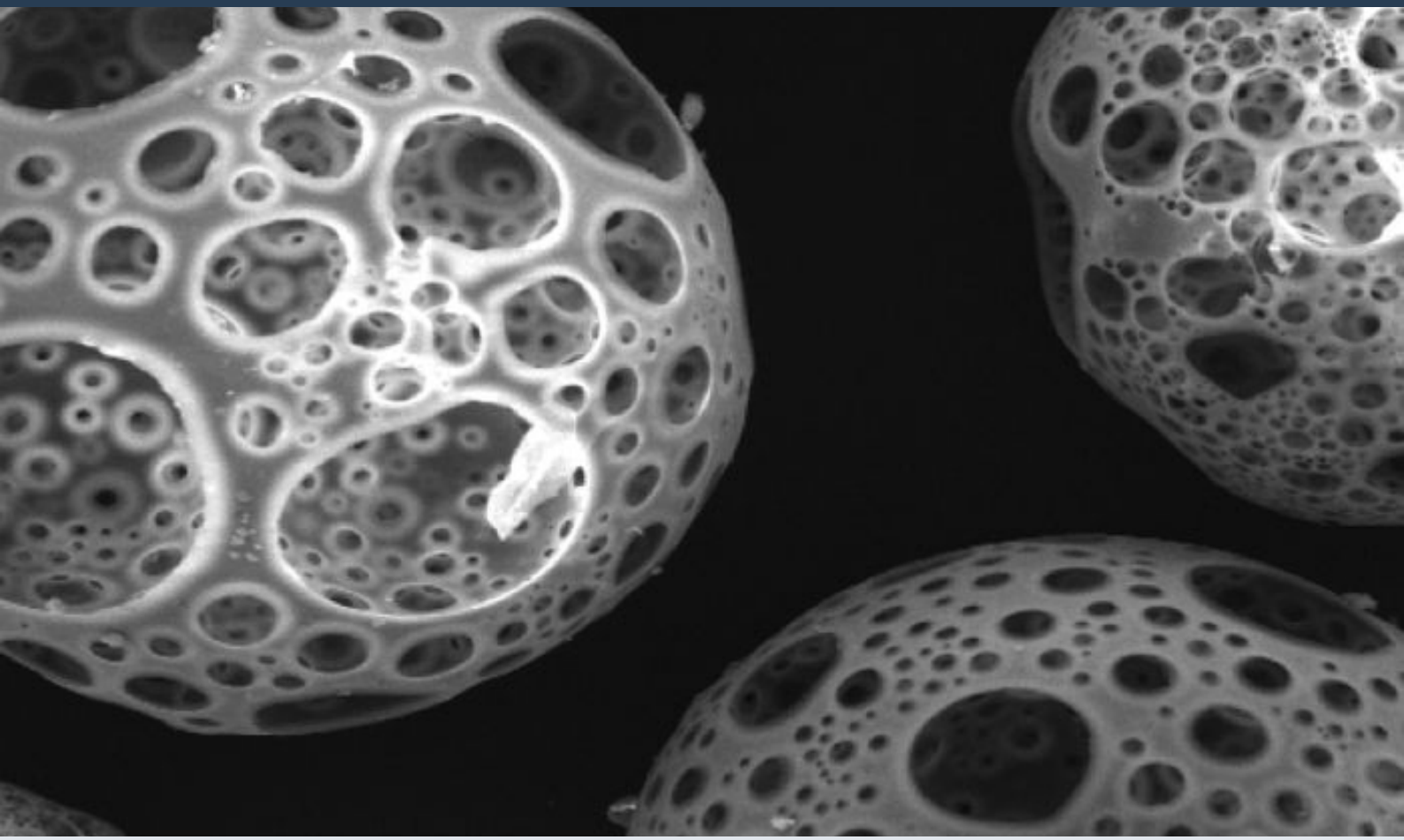
Porous Glass Microspheres

Porous glass microspheres ranging from 60 microns to 350 microns in diameter that can be loaded with active or functional entities



Header image provided by university

IP Status

Patented

Seeking

Development partner, Commercial partner, Licensing

About **University of Nottingham**

The University of Nottingham produces world-changing research by focussing on the problems and challenges that affect societies and people on a wide scale. More than 80% of Nottingham research is ranked in the highest categories ‘world-leading’ or ‘internationally excellent’.

Tech Overview

A team at the University of Nottingham have developed a scalable manufacturing process that is capable of producing unique spherical glass materials with a high degree porosity. The properties of the microspheres can be tailored to meet the users' needs by adapting the manufacturing process and feed material composition. Porous glass materials potentially have significant utility in engineering, biotechnology and in healthcare where ongoing work has started to demonstrate the utility of calcium phosphate glasses in bone repair. The applicable base materials for the porous glass particles range from phosphates, silicates, borates and glass ceramics.

Glass microspheres can be produced via a patented procedure with properties tailored to the specific demands of the application.

- Sizes ranging from 60 microns to 350 microns diameter
- The level of porosity can be controlled from < 5% up to 80%
- Degradation rates can be controlled from days, weeks up to months.
- The material can be chosen from phosphates, silicates, borates and glass ceramics

The process has in common the following key features;

- Particles produced are of spherical morphology
- The production technique is eminently scalable with the current lab-scale production method at 1-3 kg h^{-1}.
- Facile production process amenable to be transferred to GMP standards
- Patent protected

Benefits

Porous microspheres can be loaded with active or functional entities. Porosity adds a new element of functionality and flexibility. With the ability to finely tune the gross morphology and the rate of degradation of the chosen base material the production method could enable enhancement to a wide range of technologies across many sectors.

Applications

Engineering, biotechnology, healthcare, medical devices, bone regeneration, resorbable implants, separation science, osteoplasty, bone surgery, joint surgery, hip revisions, spine surgery, spinal fusion, osteo-conductivity, orthopaedic surgery, dentistry, bone fixation, filtration, filler.

Opportunity

The team are actively seeking collaboration with partners across all potential commercial applications. The process is patent protected. Small samples for assessment can be supplied by agreement.

Patents

- Patent protected - national phase