

Wilton Centre Micropore Technologies

Micropore Technologies is a solutions provider for specialist particles and emulsion manufacturing. **Dai Hayward**, CEO, talks about the company, the exciting future ahead and the benefits of working at the Wilton Centre.

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Can you start by telling us a little about Micropore Technologies?

We're a small team of five engineers and chemists, and we have developed a uniquely scalable emulsification system for the production of monodisperse emulsions, particles and microcapsules. We work with companies from a broad range of sectors – pharmaceutical, agrochemical and cosmetics, even rocket fuel, to name just a few – and provide support across the R&D process, from developing complex formulations to industrial scale-up of a thousand tonnes a year. The throughput of our technology and the level of customisation we offer is a critical distinction in this industry.

How have you developed this technology?

Our technology was first identified in Japan in 1986, so it's been around for a long while. However, it has mostly remained in academic circles because scale-up has been challenging; overcoming this issue has been our main goal since the company started. There has always been a lot of interest in the benefits of the technology and its potential impact on industrial production, but unfortunately a robust operational solution has always been just out of reach. This all changed in November 2017 when we finally cracked the problem, and we're now in the exciting position of being able to show customers that there is a pathway from lab-based R&D to industrial scale operations. Improving monodispersity as we've increased throughput has been one of the unexpected benefits of our system, and this runs counter to the trend seen with other techniques in the industry.

You mentioned other techniques for emulsification and encapsulation. What benefits does your technology offer over these competing methods?

Other than the fact that our technology has a significantly higher throughput, the primary difference is that we use metal membranes that are far less prone to blocking than porous ceramic alternatives. In addition, since we offer a greater monodispersity, our clients save energy – at least 30 per cent, if not more – and there is less wasted material. Under some emulsification regimes, polydispersity results in up to 80 per cent of the final product being discarded. We've cut this down to 20 per cent and aim to reduce it even further.



What kind of applications stand to benefit from your technology?

An obvious application is in the pharmaceutical industry, where it's often desirable to encapsulate a drug within a biocompatible polymer, offering a controlled release profile as the polymer degrades in the body. Improving monodispersity in this setting has a number of advantages that together result in much better, more predictable drug release, and as the gentle nature of the process does not degrade the drug, smaller doses are required to achieve the desired therapeutic effect. These advantages provide obvious economic benefits for a manufacturer, and administering the drug becomes more manageable and less time consuming for both patients and healthcare professionals.

So how did Micropore Technologies decide on offices at the Wilton Centre?

The company began in 2003 as a spin-out from Loughborough University. I joined as CEO in 2010, and one of the first things I did was take the company out of the university and transfer it to a crinkly tin shed – or at least that's how I refer to it! Becoming independent was a step forward but, as far as the pharmaceutical industry was concerned, our new premises didn't project the right image at all. In January 2016, we became tenants at the Wilton Centre and now occupy offices and a lab that are a considerable improvement on the shed!

Was the move merely motivated by needing a better image?

Not at all, there were other key factors in play as well. For starters, we were able to attract initial investment from UK Steel Enterprise, which focuses on job creation in ex-steel areas such as Teesside. More importantly, the engineering skill set and supporting infrastructure we need is easily accessible thanks to the petrochemical, chemical and pharmaceutical businesses in the surrounding area. Few geographical locations offer access to funding, an established supply chain, and labs and offices to rent, and – as we prepare for future growth – it's reassuring to know that our expansion will not be constrained by space or access to skilled personnel.

So what's next for Micropore Technologies?

Well, you can never rest on your laurels, and our engineers already have new ideas in the pipeline. But, right now, we're in a position where we can pursue sales of our new commercial scale-up apparatus to satisfy long-standing needs for improved economics and product performance in our target market sectors, and are in discussion with investors about a significant investment round that will enable Micropore to dramatically increase its growth. We're excited to see our technology gain traction and pique the interest of prospective customers who recognise us as a credible, scalable alternative to traditional methods, offering improved monodispersity and efficiency, alongside a reduction in energy and material waste.



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To learn more about Micropore Technologies, visit www.micropore.co.uk.

To find out more about the facilities and opportunities at the Wilton Centre, visit www.wiltoncentre.com.

