

Ana Leticia Braz¹, Derek Irvine and Ifty Ahmed¹

¹Advanced Materials Research Group, Healthcare Technologies, University of Nottingham, Nottingham, UK.; Tel: +44 (0) 115 7484675
E-mail: emxalb@nottingham.ac.uk and ifty.ahmed@nottingham.ac.uk

Introduction

Polymeric porous microspheres are promising for drug delivery and cancer therapeutics.

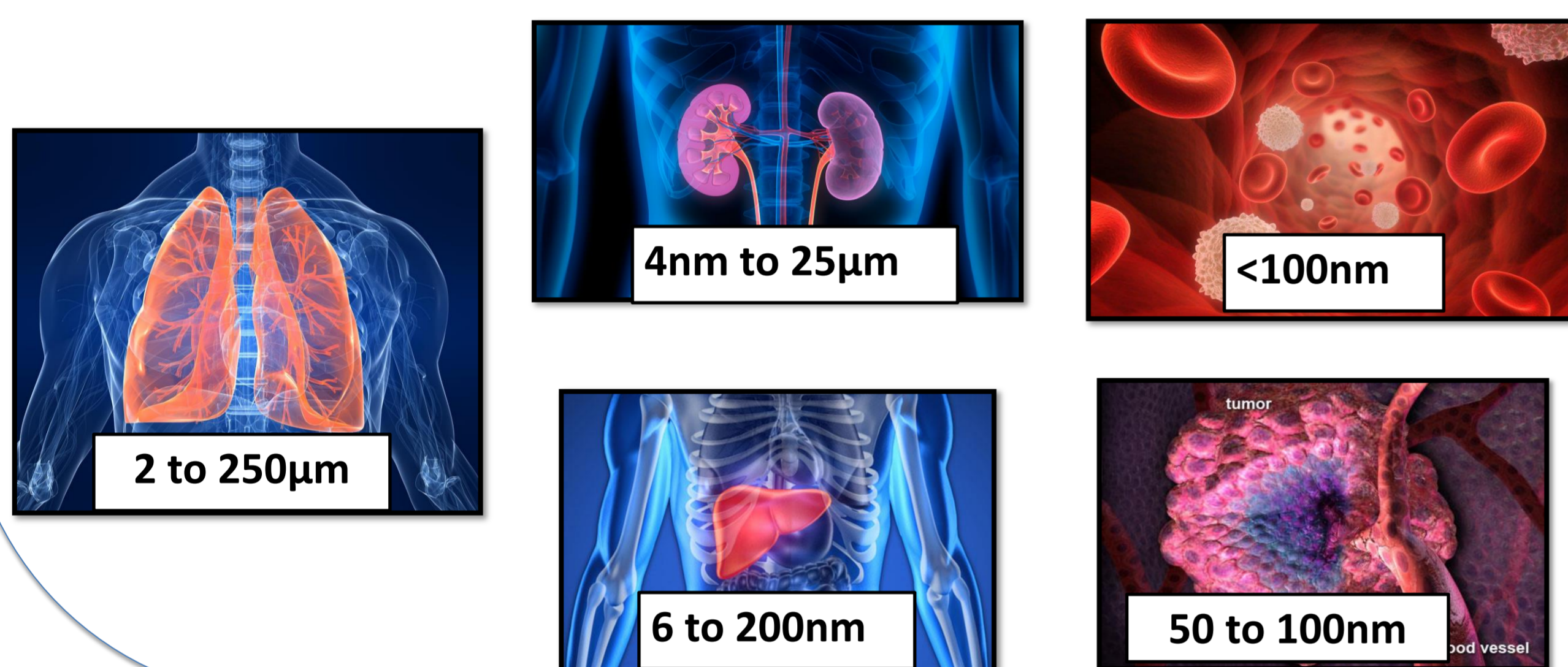
Polymeric material benefits:

- Biocompatibility
- Degradability
- Excellent thermal and mechanical properties
- Eliminated by kidney filtration and bioassimilation
- Can be made from from renewable resources^{1,2}

Porous Microspheres:

- Less polymer to be eliminated from the body
- Can be filled with cells and therapeutics
- Control drug delivery
- Cell internalization and phagocytosis^{3,4}

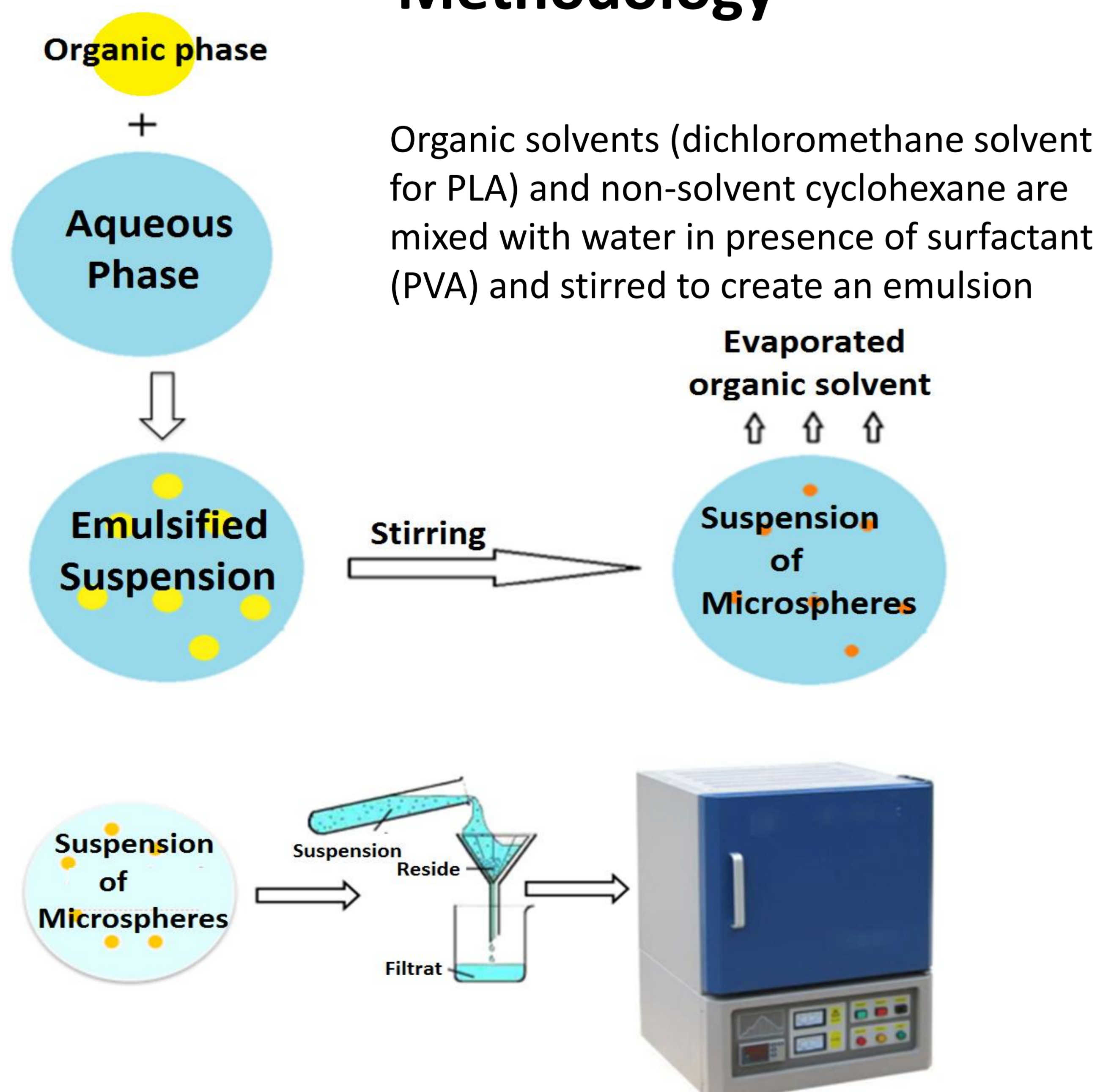
Delivery site and target size^{5,6,7}:



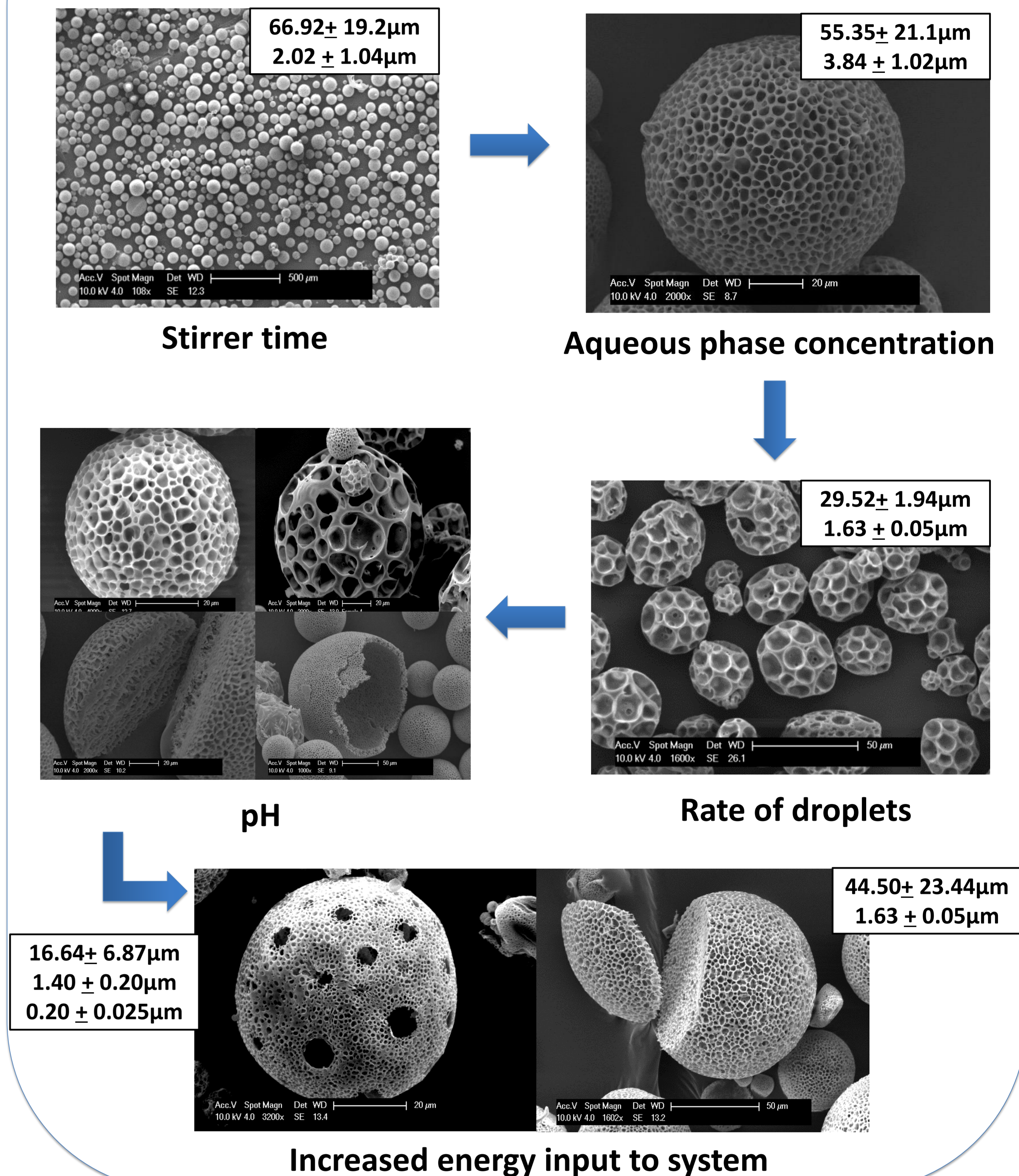
Aim and Objectives

In this work emulsion based techniques were used with varying surfactant concentration (polyvinyl alcohol) and stirring conditions to produce porous microspheres with varying porosity ranges.

Methodology



Results and Discussion



Conclusions

- The sphericity, porosity, surface morphology and size of spheres can be controlled by varying the parameters
- Hydrolysis can be applied post production to enable interconnected and wide-open porous structures
- These microspheres have a variety of applications, including – drug carriers, enzyme transplantation, gene therapy and as contrast agents in diagnostics.

References

1. Almeida S A *et al.*, J.Poly Test., 31, 267-275, 2012.
2. Vert M *et al.*, Euro. Poly. J., 68, 516-525, 2015.
3. Leong K W *et al.*, J.Contro.Rel., 53, 183-193, 1998.
4. Kim M R *et al.*, Macrom. J., 34, 406-410, 2013.
5. Bertrand N *et al.*, J.Contro.Rel., 161, 152-163, 2012.
6. Broichsitter M B *et al.*, J.Contro.Rel., 161, 214-224, 2012.
7. Yu Y *et al.*, Biom.J., 35, 3467-3479, 2014.

Acknowledgements

The authors would like to thank the University of Nottingham Faculty of Engineering Dean of Engineering Scholarship and Capes for International Excellence in Research for funding this project.