

Dr Gowsihan Poologasundarampillai

Research Fellow in Biomaterials & Bioimaging
University of Manchester, School of Materials

PROFILE

Biomaterials and biomedical research with more than 9 years of experience in the field. Active on the development of biomaterials through the sol-gel route, especially that of inorganic bioactive glasses and organic/inorganic hybrids. Current, focus is on the development of self-assembling organic and inorganic moieties that are also stimuli responsive for use as 3D printable inks to synthesise biomaterials for a range of applications. Also developing multimodal bioimaging capabilities at the national facilities in RCaH and Diamond to better understand the material structure and function.

EMPLOYMENT HISTORY

University of Manchester, Manchester, UK, May 2014 – Present

5 Year Research Fellow, ***Biomaterials for bone regeneration and wound healing & Synchrotron bio-imaging.***
Five year research fellowship based at the Research Centre at Harwell (RCaH).

Imperial College London, London, UK – June 2011 – April 2014

Postdoctoral Research Associate, ***Nanostructured materials for bone and oral defect repair.*** Was second in charge of a large research group consisting of 20+ people. Successfully managed several research projects prioritising work to deliver maximum output in each within appropriate time. Have published in journals of high impact and presented in international conferences. Established collaborations with academic colleagues in engineering and life sciences, e.g. performed experiments on the Diamond I13 beamline with the MXIF group and conducted multiphoton confocal imaging at CLF. Contributed to grant proposals and wrote business plans for potential spinouts leading from two patents.

Nagoya Institute of Technology, Nagoya, Japan – Oct 2009 – March 2011

Postdoctoral Research Associate, ***Fibrous materials for bone regeneration.*** Developed a novel cotton-wool-like material with properties for bone regeneration and wound healing.

Imperial College London, London, UK – March 2009 – Sept 2009

Postdoctoral Research Assistant, ***Hybrid scaffold materials for bone regeneration.*** Successful beamtime application to the European synchrotron research facility. Research resulted in a patent application.

QUALIFICATIONS

Imperial College London, Department of Materials, London, UK – Oct 2005 – August 2009,

PhD in Biomaterials,. Thesis title – “Development & Characterisation of Nanocomposites for Bone Tissue Engineering.”

Imperial College London, Department of Materials, London, UK – Oct 2001 – August 2005

MEng Aerospace Materials,. Awarded 1st Class

MEMBERSHIP OF PROFESSIONAL BODIES

- Member, European Society for Biomaterials
- Member, International Sol-Gel society
- Member, Royal Society of Chemistry

GRANTS AND AWARDS

2010 The 2010 **Matthey Prize** by the Department of Materials, Imperial College London for the **best PhD by a RSM associate**

TEACHING, SUPERVISION AND ADMINISTRATIVE EXPERIENCE

- Imperial Horizons Tutor for the 1st year undergraduate students.
- Lecture given to St George's Hospital Medical School final year undergraduate students on the use of tissue scaffolds for regenerative medicine.
- Contributed to the designing and setting up of a laboratory experiment for the 3rd year undergraduate students to evaluate the rheological properties of calcium alginate gels.

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- I was a graduate teaching assistant from 2005-2007 at the Department of Materials, demonstrated the Fracture Toughness lab and marked reports.
- Supervisions of MSc Biomedical, MSc Biomaterials and Undergraduate Research Opportunity Programme (UROP) students.
- I am registered as a consultant on the Imperial Consultants register. Consulted on a materials characterisation project for a defence manufacturing company and produced sol-gel glasses for a health and beauty company.
- Responsible for the Biomaterials laboratory, including training and safety.

PUBLICATIONS

1. **Poologasundarampillai G** et al., "Cotton-wool-like bioactive glasses for bone regeneration" Published online in Acta Biomaterialia (**IF 5.09**)
2. **Poologasundarampillai G** et al., "Poly(γ -glutamic acid)/ silica hybrids with calcium incorporated in the silica network by use of a calcium alkoxide precursor" Published online in Chemistry a European Journal (**IF 5.83**)
3. Wang D, Nakamura J, **Poologasundarampillai G et al.**, "ToF-SIMS evaluation of calcium-containing silica/ γ -PGA hybrid systems for bone regeneration" Applied Surface Science, 2014, 309, 231 (**IF 2.11**)
4. Wang D, **Poologasundarampillai G** et al., "Strategies for the chemical analysis of highly porous bone scaffolds using secondary ion mass spectrometry (SIMS)" Biomedical Materials, 2014.
5. Nakamura J, **Poologasundarampillai G** et al., "Tracking the formation of vaterite particles containing aminopropyl-functionalized silsesquioxane and their structure for bone regenerative medicine" Journal of Materials Chemistry B, 2013, 1, 4446 (**IF 6.10 for J Mater Chem**).
6. Yun H, **Poologasundarampillai G** et al., "Room temperature fabrication of glass based scaffolds using the combination of sol-gel reaction and rapid prototyping system" Journal of Tissue Engineering and Regenerative Medicine, 2012, 6, S1, 228. (**IF 3.28**)
7. **Poologasundarampillai G** et al., "Bioactive silica-poly(γ -glutamic acid) hybrids for bone regeneration: effect of covalent coupling on dissolution and mechanical properties and fabrication of porous scaffolds" Soft matter, 2012, 8, 4822-4832. (**IF 3.91**)
8. **Poologasundarampillai G** et al., "Electrospun silica/PLLA hybrid materials for skeletal regeneration." Soft matter, 2011, 7, 10241-10251. (**IF 3.91**)
9. **Poologasundarampillai G** et al., "Modification and mechanical properties of electrospun blended fibermat of PLGA and siloxane-containing vaterite / PLLA hybrids for bone repair." eXPRESS Polymer Letters, 2011, 5, 873-881. (**IF 1.45**)
10. Yu B, **Poologasundarampillai G** et al., "A new calcium source for bioactive sol-gel hybrids." Bioceramics Development and Applications, 2011, 1.
11. Yue S, Lee PD, **Poologasundarampillai G** et al., "Evaluation of 3-D bioactive glass scaffolds dissolution in a perfusion flow system with X-ray microtomography." Acta Biomaterialia, 2011, 7, 2637-2643. (**IF 5.09**)
12. Jones JR, **Poologasaundarampillai G**, Hill RG, "Bioactive Nanocomposite material.", 2011, Patent Publication Number US 2011/0009327.
13. **Poologasundarampillai G**, et al., "Synthesis of bioactive class II poly(γ -glutamic acid)/silica hybrids for bone regeneration." Journal of Materials Chemistry, 2010, 20, 8952-8961. (**IF 6.10**)
14. Nakamura J, **Poologasundarampillai G** et al., "Preparation of siloxane-containing vaterite/poly (L-lactic acid) hybrid microbeads with silicate and calcium ions-releasing ability." Journal of the Ceramic Society of Japan, 2010, 118, 541-544. (**IF 1.00**)
15. Wakita T, Obata A, **Poologasundarampillai G** et al., "Preparation of electrospun siloxane-poly(lactic acid)-vaterite hybrid fibrous membranes for guided bone regeneration." Composite Science and Technology, 2010, 70, 1889-1893. (**IF 3.82**)

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16. Singh R, Lee PD, Jones JR, **Poologasundarampillai G** et al., "Hierarchically structured titanium foams for tissue scaffold applications." *Acta Biomaterialia*, 2010, 6, 4596-4604. **(IF 5.09)**
17. Yue S, Lee PD, **Poologasundarampillai G** et al., "Synchrotron X-ray microtomography for assessment of bone tissue scaffolds." *Journal of Materials Science: Materials in Medicine*, 2010, 21, 847-853. **(IF 2.33)**
18. Jones JR, Atwood RC, **Poologasundarampillai G** et al., "Quantifying the 3D macrostructure of tissue scaffolds." *Journal of Materials Science: Materials in Medicine*, 2009, 20, 2, 463-471, February. **(IF 2.33)**
19. Jones JR, **Poologasundarampillai G** et al., "Non-destructive quantitative 3D analysis for the optimisation of tissue scaffolds." *Biomaterials*, 2007, 28, 1404-13. **(IF 7.60)**

RECENT ORAL PRESENTATIONS

- Grand Challenges in Biomaterials MXIF Workshop, May 2014, Manchester, UK. 'Multi-modal imaging of biomaterials and challenges to overcome.'
- 3D manufacturing workshop at the Institute of Making, October 2013, London, UK. '3D Manufacturing – Biomaterials and Tissue Regeneration.'
- 11th International Conference on Materials Chemistry (MC11), July 2013, Warwick, UK. 'Bioactive sol-gel hybrid scaffolds using natural polymers for tissue engineering.'
- The entrepreneurial way business idea pitch opportunity, March 2013, London, UK. 'BioWool as a dental bone graft.'
- Invited talk at the 4th International Workshop on Advanced Ceramics, December 2010, Nagoya, Japan. 'Sol-gel electrospun 3D silicate fibers for bone regeneration.'
- 3rd International Congress on Ceramics (ICC3), November 2010, Osaka, Japan. 'Electrospun sol-gel organic/bioactive silica hybrid materials for bone regeneration.'
- Hybrid Materials, March 2009, Tours, France. 'Bioactive silica/poly (γ -glutamic acid) hybrid scaffolds for bone regeneration.'
- European Society for Biomaterials, September 2007, Brighton, UK. 'Development of the bioactive glass/poly (γ -glutamic acid) hybrid scaffolds for bone tissue engineering.'
- European Society for Biomaterials, September 2006, Nantes, France. 'Non-destructive quantitative 3D analysis of connectivity and permeability of porous scaffolds.'
- Annual conference of the Tissue and Cell Engineering Society, July 2006 at University of Sheffield. 'Non-destructive quantitative 3D analysis of structural, flow and mechanical properties of porous scaffolds'.

POSTER PRESENTATIONS

- 2004 Queens Anniversary Prize, May 2014, Manchester, UK.
- 17th International Sol-Gel Conference, August 2013, Madrid, Spain.
- World Biomaterials Congress, June 2012, Chengdu, China.
- World Biomaterials Congress, May – June 2008, Amsterdam, Netherlands.
- ESRF Users Meeting 2007, February 2007, ESRF, Grenoble, France.
- GSEPS Research Students' Research Symposium, July 2006, Imperial College, London.

REFEREES - Available upon request.