

Perry Higgs

BSc (Hons), AUS, MRSC

Senior Scientist – Symphony Environmental Ltd

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Analytical chemist with experience in polymer characterisation, processing, degradation and stabilisation; accelerated ageing techniques and shelf-life prediction; and prodegradant additive formulation. Interested in the fate and impacts of plastic litter and driven by new challenges arising from the determination and analysis of microplastics in the environment.

EXPERIENCE

Senior Scientist, Symphony Environmental Ltd

Jan 2017 – Present

Collaborating with research and academic institutions for the research and understanding of the fate and biodegradation of plastic litter and the development of improved polymer degradation and biodegradation.

Overseeing the development and testing of prodegradant additives and oxo-biodegradable plastic products. Conducting and commissioning of testing and long-term experiments with external test houses, including natural and accelerated ageing, characterisation of degradation products and subsequent biodegradation, ecotoxicological impacts and recycling.

Maintaining and demonstrating compliance and compatibility of prodegradant additives with relevant food contact, chemicals, and degradable and biodegradable plastics legislation. Establishing standards and specifications for additives and finished product performance. Raw materials selection. Investigation of production or finished product quality issues.

Scientific Advisor, Oxo-Biodegradable Plastics Association (OPA)

Jun 2016 – Present

Advising the industry trade body on scientific and technical aspects of oxo-biodegradable plastic technology, with specific emphasis on testing methodology, standards development and keeping up to date with the current developments in the literature and academic work.

Representing the OPA and advising national standards bodies, testing houses and government institutions on the development, implementation and enforcement of standards and legislation relating to degradable and biodegradable plastics.

Laboratory Manager, Symphony Environmental Ltd

Oct 2013 – Present

Symphony opened a new laboratory facility in 2013 which consolidated development tools, accelerated ageing and characterisation of polymer stability and degradation and laboratory scale plastic conversion equipment. I oversaw the design and construction of the laboratory and in addition to my previous responsibilities took on management of the laboratory including all areas of quality, training and health and safety administration.

- Supervising a team which has grown from two to seven staff members.
- Procurement, calibration and maintenance of laboratory equipment.
- Development, implementation, maintenance and auditing of management systems and procedures according to ISO 9001 and 14001.
- Health & Safety Coordinator (laboratory and technical activities), COSHH Manager/Accessor, Radiation Protection Supervisor (RPA, IRR99/17).

Technical Executive, Symphony Environmental Ltd

Sept 2008 – Jan 2017

Formulation design and application development of prodegradant additives for polyolefin products.

- Liaising between the technical department and management, sales and marketing teams.
- Review of new product application and making appropriate recommendations for implementation of a prodegradant system.

- Overseeing internal testing services, including method development and remote management of laboratory undertaking:
 - Polymer characterisation by conventional and micro- infrared spectroscopy, specialising in the determination of features relating to polymer degradation.
 - Accelerated ageing techniques and method development. Stability and degradation studies under accelerated laboratory conditions. Confirmation of degradation behaviour and shelf-life predictions.
 - Elemental composition of plastics by x-ray fluorescence (XRF) spectroscopy, for the purpose of determination of transition-metal prodegradant catalysts in plastic products and articles.
 - Laboratory scale blown film and compounding extrusion, injection moulding.
 - Properties retention and failure investigation: including mechanical properties, sealing, and colour properties.
- Travelling regularly to satellite accelerated ageing laboratory and pilot manufacturing facilities oversee testing and conduct manufacturing trials.

Scientist – Industrial Trainee, Particle Characterisation, Materials Science, Pfizer UK

Sept 2006 - August 2007

Supporting project and manufacturing teams by providing size and morphology characterisation of active pharmaceutical compounds and excipients as dry powders and suspensions.

- Particle size determination by laser diffraction.
- Particle size and morphology characterisation by optical microscopy and image analysis.
- Surface area and Porosity by cryogenic BET gas adsorption.

Dissertation Project: '*Investigation into the Application of Image Analysis for Particle Characterisation in the Pharmaceutical Industry*'

EDUCATION & QUALIFICATIONS

Birkbeck - University of London, MSc Analytical Chemistry

October 2018 - June 2021

University of Surrey, BSc (Hons) Chemistry

Sept 2004 - June 2008

Core chemistry principles with optional and additional modules focused towards analytical and materials chemistry. Dissertation Project: '*Development of Hydrogel-Based Molecularly Imprinted Polymers*'.

Associateship of the University of Surrey

Sept 2006 - August 2007

Awarded for the professional training year undertaken with Pfizer UK Ltd, Sandwich, Kent.

PUBLICATIONS

- Co-author: Dussud C, et al., (2018) *Colonization of non-biodegradable and biodegradable plastics by marine microorganisms*, *Front. Microbiol.*, 18 July 2018
- Co-author: C. Dussud, et al., (2018) *Evidence of niche partitioning among bacteria living on plastics, organic particles and surrounding seawaters*, *Environmental Pollution* 236, 807-816

PROFESSIONAL BODIES

- Royal Society of Chemistry, Member
- Society of Chemical Industry, Corporate Member
- British Plastics Federation, Corporate Member
- Oxo-Biodegradable Plastics Association (OPA), Corporate Member & Advisor
- British Standards Institute, Technical Committee Member representing the OPA:
 - PKW/0 Packaging
 - PKW/01 Packaging – Biodegradability
 - PRI/075 Plastics and rubber film and sheets