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APPLICATIONS OF STIMULI-RESPONSIVE COPOLYMERS

G. Baquey, S. Biggs, S. Heriot, M. Manguian

Chamelic Ltd. Leeds Bioincubator, Garstang Building, University of Leeds, LS2 9JT, Leeds, United Kingdom (m.manguian@chamelic.co.uk; www.chamelic.co.uk)

Stimuli-responsive polymers are polymers that can respond to small changes in their environment with a large change in some physical property. Chamelic Ltd has focussed on the development of novel responsive polymers for application in controlled drug delivery, personal care, industrial coatings. In particular for coatings, stimulus responsive polymers may have interest for a wide variety of possible uses where controlled changes in properties such as adhesion, lubrication, and wetting are required.

To manufacture such polymers, a controlled process is required in the (co)polymer synthesis to achieve a product with properties such as a desired molecular weight and a narrow weight distribution or polydispersity. We are able to tailor these properties by using controlled/living radical polymerization (CLRP) techniques which offer unprecedented opportunities for synthesis of a large diversity of block copolymers with precisely tailored nano- and micro-scale features.

Our main product development is an easy-clean surface treatment for use on a wide range of surfaces such as metals (aluminium, stainless steel), glass and plastic (PU, PMMA, PVC etc). This technology is based on the stimuli-responsive property of the polymer and their reversible morphology once upon adsorbed onto a surface. This allows the formation of a smart microstructured surface via a cheap, easy and straight forward process, without the use of organic solvents, complex drying and/or annealing procedures. Methods of application include spraying, dipping or curtain/ flow coating.

The simplicity of the treatment process means that this product is suitable for both domestic and industrial applications. Chamelic Ltd is currently working on the development of tailored functional materials for application in smart coating as well as for biological applications.