allied academies

Sotiria Tsochataridou et al., Pharmaceutics & Drug Delivery Research 2018, Volume 7
DOI: 10.4172/2325-9604-C3-032

International Conference and Exhibition on Joint Event
Pharmaceutics & Novel Drug Delivery Systems
21st International Conference on &
Advanced Nanoscience and Nanotechnology
June 21-22, 2018 | London, UK

Power and flow characteristics during the mixing of simulated new generation automotive coating formulations

Sotiria Tsochataridou, Herrick Yu, Keith Parsons, Gul Ozcan-Taskin and **Chris D Rielly**
Loughborough University, UK

The automotive industry has a continual need to restyle vehicles, both in terms of functional improvements and aesthetic requirements driven by consumer trends. Many of the surfaces are now required to be constructed from coated plastic materials rather than metals to reduce vehicle weight and improve fuel efficiency. In addition, the range and complexity of functions that require driver interactions with the vehicle are increasing as touch screens are used for devices such as integrated satellite navigation and control systems. This has driven demand for interior plastics that combine functional and aesthetic characteristics within light weight constructions. However, many plastics have limitations, especially in terms of durability and physical robustness in comparison to metals and, therefore, the need for surfaces with better performances has led the investigation of new coatings. These have been the main drives for MacDermid autotype to develop new formulation coatings for the automotive industry with enhanced surface properties, by combining functional nanoparticles with Film Insert Molding technology. Initial lab scale testing has demonstrated promising results. Now, the challenge is to develop the coating into larger-scale production whilst maintaining the superior performance. The main objective of this project is to assess and develop processes for these next generation coatings, such that the functional nanoparticles are dispersed and stabilized and the enhanced final product properties are maintained in coatings manufactured in quantities beyond lab scale to pave the way for industrial scale manufacture and commercialization. This project therefore aims to develop a new formulation coating and study the associated processes- primarily mixing. Mixing processes are complex and require an understanding of the fluid dynamics. Therefore, the power and mixing characteristics for each scale, from lab to pilot and ultimately to production scale were calculated and evaluated. The presentation will provide an overview of the approach taken and results relating to the mixing of certain additives used during the manufacture of novel automotive coatings with nanoparticles in their formulation.

Speaker Biography

Sotiria Tsochataridou started her PhD in Chemical Engineering & Advanced Materials at Newcastle University, under the supervision of Prof. Ian Metcalfe in 2014. Throughout her PhD, she studied the fundamentals of gas permeable membranes using model membranes for CO_2 separation. During the writing up of her PhD research in 2017, she joined Loughborough University as a research assistant. The main objective of the project is to assess and develop processes for a new formulation automotive coating, such that the enhanced final product properties are maintained in coatings manufactured in quantities beyond lab scale to ensure industrial scale manufacture and commercialization.

e: S.Tsochataridou@lboro.ac.uk

Notes: