

NEWSLETTER

LPD Lab Services

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One-Stop Shop for Industrial Process Problem Solving, Consulting and Routine Analysis

Welcome to our third newsletter. We send this infrequently as a means of keeping our customers up to date with some of our capabilities, services and news at LPD Lab Services. If you have colleagues who you think may be interested in hearing from us please feel free to forward this on to any interested parties.

Product and Process Deformation & Reverse Engineering

Deformation involves taking a chemical or materials product and separating it into its constituent components, which are then identified and quantified so that the end result is a "recipe" and manufacturing process for the given product.

As the methods used to deformulate a chemical product vary depending on the type of product, we use a variety of analytical techniques to separate and identify the components of a product. Our aim is not only to provide the customer with a breakdown of contents of a product, but also to provide a value added service: For example we can make trial batches of the product if necessary or advise our customers how to do it safely themselves, also we give guidance on improving the formulation or manufacturing method to give the product additional functionality, improve process yield or reduce costs as well as give advice on replacement components if a formulation contains banned substances.

Interface Adhesion, Adhesives and Coatings

In today's modern world, the manufacture of products involves dissimilar materials to be robustly joined together. Problems are not only encountered in designing a product, but also in ramp up or cost down activities when a cheaper source of materials or processing change is implemented, unknowingly changing a subtle ingredient in the formulation or method. The strength and the chemistry of the interface where materials meet are vital to the longevity of the joint.

The interface chemistry can be manipulated to promote good adhesion, by use of sizes, adhesion promoters or coupling agents for example, in carbon fibre composite materials, paint coatings or adhesives. A joint is considered poor if it fails

LPD are also capable of performing materials and product evaluation as well as reverse engineering of general and competitor products. This can apply to anything from all manner of mixed materials from simple products to complex combinations

of subcomponents: Each component of a product can be characterised from a materials and possible manufacturing method perspective, e.g. alloy composition, polymer types, process, treatments etc. Advice can also often be given for practical product and process improvements to generate market or price advantages.



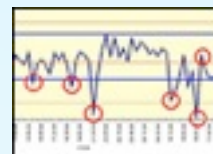
Industrialisation for Product and Process Development

LPD staff have wide experience in the development, industrialisation and optimisation of products and processes using 6 sigma methodology, and have applied this knowledge to a diverse range of customer industries.

Typical examples of what the laboratory can offer include:

- ★ Measurement/QC test development and validation
- ★ Risk analysis via Design and Process FMEA
- ★ Data analysis using statistical techniques and Minitab software
- ★ Process definition and optimisation using Design of Experiment (DoE) techniques
- ★ Process capability and yield improvement

The marriage of LPD Lab Services extensive analysis capabilities together with the product/process industrialisation knowledge and experience offers a powerful package in assisting customers in making the difficult transition from working development samples to a reliable, cost effective product for high yield volume manufacture.



adhesively at the interface as joints are designed to be stronger than the bulk material they are joining.

Analysis to determine exactly what is on a failure surface is critical in determining why joints fail and to improve performance. A range of surface analytical techniques are used to determine the locus of failure; either SIMS or XPS can be used, coupled with FTIR as a fingerprinting technique to explore the chemical aspects of adhesion. Optical microscopy and SEM physically characterise mechanical keying aspects of adhesion. The wealth of experience the laboratory has in these matters allows advice to then be given on how to contain and ultimately eliminate the adhesion problem by better process control, changing formulation or better substrate surface preparation.

Website Update

For more information on any of the subjects mentioned in this newsletter, please visit our website or feel free to call us on:

TEL: +44 (0)1254 676 074**WEB: www.lpdlabservices.co.uk**