

APPLYING PHYSICAL ORGANIC PROCESSES TO FORMULATION CHEMICAL STABILITY

Neil Griffin

Syngenta, Jealott's Hill International Research Centre, Bracknell, RG42 6EY, England
neil.griffin@syngenta.com

Formulation chemical stability is of great importance due to strict criteria, less than a 5% loss in Active Ingredient (AI) after two years at ambient storage is required for regulatory approval even before efficacy considerations are regarded. Whilst simple storage tests can identify where issues lie, supplementary factors such as climate variations in different global positions in the supply chain are often not considered. This talk aims to describe the basic approach taken to increase the understanding of chemical stability in our formulations, by applying Physical Organic principles to model the loss of AI in varying conditions. This ranges from simple solubility and kinetic measurements in the system of interest to more invested approaches such as studying non-aqueous pKa's, photocatalysed decompositions and co-crystals.

The use of case studies to exemplify the approach will detail how whilst we vastly increase the understanding of our formulations, unexpected observations can still occur requiring further investigations to extend our understanding.