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## Hot melt extrusion: A novel approach for the development of poorly soluble drugs

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**H**ot Melt Extrusion (HME) is a continuous process manufacturing technology that can be successfully used for the development of water insoluble active substances. By providing excellent mixing of a drug and a polymer carrier within the extrusion barrels HME can facilitate increased dissolution rates of insoluble drugs. HME induces drug - polymer interactions (e.g. via H-bonding) where the drug is either amorphous or molecularly dispersed within the polymer carrier and thus increasing the solubility of drug. HME is a versatile technology that can be used for both hydrophilic and hydrophobic drugs and manufacture high drug loaded extrudates in the form of pellets, granules or thin films. Various approaches can be used to select the appropriate drug - polymer combinations such as Hansen solubility parameters and more recently molecular modeling approaches. Several examples of miscible drug - polymer blends are presented in these studies where extruded materials are evaluated as finished products.

HME is a novel continuous manufacturing process, which also combines quality by design (QbD) approaches and process analytical tools (PAT) for the development of oral solid dosage forms. It is anticipated that HME will play a key role in the future development of poorly soluble drugs.

### Biography

Dennis Douroumis is a Reader in Pharmaceutical Sciences in the Faculty of Engineering and Science at the University of Greenwich, UK. He obtained his BSc in Chemistry and Ph.D. from the Department of Pharmacy at Patras University in Greece. He worked as a postdoc fellow (2004) at the Friedrich-Schiller University of Jena and as a Team Leader (2005) in Biolitec Pharma. He worked for Phoqus Pharmaceutical as a Senior Scientist (2005) while he joined the School of Sciences in 2007. He is member of the Board of the Academy of Pharmaceutical Sciences (APS) and joined the Editorial Boards of more than five international peer reviewed journal including the Wiley's Editorial Board for the series in "Advances in Pharmaceutical Technology". He has published more than 120 peer-reviewed publications, including 50 full papers, 4 book chapters and 2 books.

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