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EHDA technology utilizing different bio-structure

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The growing trend within the nanotechnology remit has led to the emergence of novel approaches and techniques for advanced pharmaceutical formulations. Electrohydrodynamic atomization (EHDA) is a single step and multipurpose technology for the fabrication of products suitable for biomedical and other healthcare applications include in drug delivery, tissue engineering, wound dressing development, targeted drug delivery and sustained drug delivery. The principal underlying EHDA is based on applying an electrical force to drive atomization of liquids in to formulated micro- and nano- structures. Various morphologies can be achieved using a range of EHDA systems including particles (through electro spraying) and fibers (through electro spinning). Processing parameters (flow rate and applied voltage) and crucial liquid physical properties (density, electric conductivity, viscosity and surface tension) impact on structure topography, morphology and size. The process is able to incorporate various biological and other materials of significance (e.g. proteins, living cells, spore and DNA) with synthetic and existing materials (such as polymers, ceramics and metals). More specifically, EHDA systems have significantly enhanced; encapsulation ability, stability, dissolution and bioavailability of existing active pharmaceutical ingredients (API) which maybe either hydrophilic or hydrophobic. In addition, the nature of these chemicals can be afforded into the amorphous state making them more suitable for permeation and bioavailability. This presentation will focus on the fundamental process, examples of structures that can be engineered and various administration routes that can be addressed. It will also discuss the key technological advances in the field and will provide an insight into the EHDA network which is currently working towards the appreciation of these technologies in the drug delivery remit.

Biography

Rita Haj Ahmad has completed her PhD at University of Sunderland and currently pursuing Post-doctoral studies at School of Pharmacy, De-Montfort University under the supervision of Professor Zeeshan Ahmad. Her research interest is focused on "Utilizing various nanotechnologies for the delivery of proteins, peptides, antibacterial and anticancer agents". She has published more than 11 peer-reviewed papers in internationally recognized journals.

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