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Abstract for an Invited Paper
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Polymer Physics as a Key to Advanced Manufacturing at Dow

FLORIAN SCHATTENMANN, The Dow Chemical Company

Dow combines the power of science and technology to passionately innovate what is essential to human progress. The Company is driving innovations that extract value from the intersection of chemical, physical and biological sciences to help address many of the world's most challenging problems such as the need for clean water, clean energy generation and conservation, and increasing agricultural productivity. Dow's integrated, market-driven, industry-leading portfolio of specialty chemical, advanced materials, agrosiences and plastics businesses delivers a broad range of technology-based products and solutions to customers in approximately 180 countries and in high growth sectors such as packaging, electronics, water, coatings and agriculture. In 2013, Dow had annual sales of more than \$57 billion with more than 6,000 products manufactured at 201 sites in 36 countries across the globe. Given the large scale of Dow's manufacturing footprint and broad range of industries, markets and applications Dow serves, a wide range of advanced manufacturing technologies are being developed. The presentation will give an overview of select manufacturing technologies and how polymer physics, modelling, analytical techniques and experimental validation are being employed to drive world leading innovation. We will discuss examples from several product technologies including composites, adhesives and polymers synthesis.