

2nd International Conference on

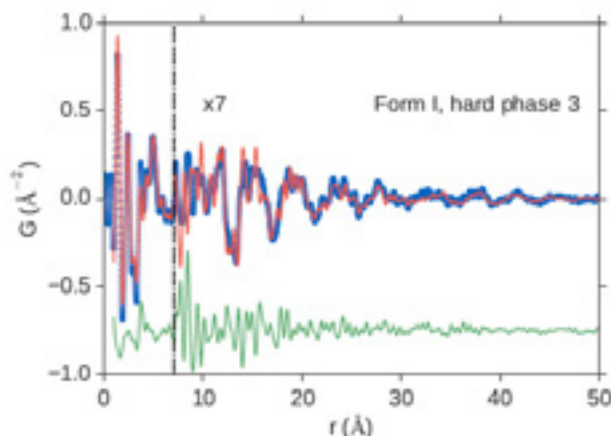
APPLIED CRYSTALLOGRAPHY

October 16-17, 2017 | Chicago, USA

Crystal structures of polymers: Will PDF paves the way to greater understanding?

Bernd Hinrichsen¹, Maxwell W Terban² and Robert E Dinnebier³¹Ludwigshafen, Germany²Columbia University, USA³Max Planck Institute for Solid State Research, Germany

Industrial polymers (plastics) are a fundamental part of modern society. The global production of polymers has been growing steadily from the tentative beginnings in the 1940s to 322 million tons in 2015. This immense and ubiquitous use of polymers has led to dramatic pollution issues and legislation curtailing use of environmentally detrimental polymers. Surprisingly little is known about the solid-state structure of these megaton products. Nuclear magnetic resonance studies elucidate the molecular structure in a liquid solution, transmission electron microscopy gives an inkling into the solid-state microstructure; however the chemistry involved in polymeric structures are only well characterized for a few examples by X-ray diffraction studies. Often these are performed on idealized samples, not necessarily representative of the real-life material. We will be presenting works that have been carried out and illustrate the potential which the PDF method brings to polymer research with special focus on challenging subjects such as biodegradation.



Biography

Bernd Hinrichsen has his scientific foundation in crystallography, having attained his PhD at the Max Planck Institute for Solid State Research under the supervision of Robert E. Dinnebier. He spent some time at Bruker AXS as an Application Scientist for powder X-ray diffraction before taking over the responsibility of the powder X-ray diffraction lab at the main research site of BASF in Ludwigshafen, Germany. He is currently responsible for PXRD, Solid-State, NMR, TEM and SEM labs.

bernd.hinrichsen@basf.com

Notes: