

The development chain for products made from nanostructured polymers – “TheLink” a H2020 ETN

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TheLink is a research and training program for 15 early stage researchers (ESRs), spanning the development chain for nanostructured polymers (composites and phase separated materials) and the products made from them. Nanostructured polymers are attracting scientific and industrial interest due to the outstanding properties and functionalities that can be achieved. TheLink therefore aims to generate this knowledge along the material development chain from design to production on an interdisciplinary basis, combining simulation, characterization and processing. Three case studies (phase separated polymers, separation membranes, composites for electrical conductivity/self-diagnosis/EMI shielding) will be used to guide research and to demonstrate the project developments.

Despite about two decades of intense research on nanostructured materials, the theoretical benefits of this special material class have not yet been fully exploited in industrial products. The main reasons for this are the relatively long development cycles for new materials, due to a lack of practical experience with them in industrial environments and a lack of appropriate simulation and characterization techniques for the properties of the final product.

TheLink therefore aims to further the development and application of

- Industrially-useable multi scale simulation techniques for nanostructured polymers and the products made from them using multiscale approaches from atomic to macro level
- Volumetric characterization methods to characterize nanostructured polymers on a nano and microscale at industrial environments
- New and improved scalable processing routes for nanostructured polymers with defined structures, based on an in-depth understanding of the complex relations between nanostructures, polymer systems and processing parameters, in order to improve material properties in the final products

The research program will consequently guide and sharpen the understanding of nanostructured materials by a cross disciplinary approach along the complete development chain from the design of the material to the final product. The poster displays the approach of the project and invites to discuss the topics addressed in order to ensure the applicability of the project results in industrial environments.