

NaPolyNet Executive Summary

NaPolyNet is a Coordination Action initiated by the European Commission within the 7 FP Theme4 - NMP. It started in April 2008 for 36 months and is performed by 17 partners from 10 countries. NaPolyNet addressed the area of characterization of polymer nanostructures in the field of packaging, textiles and membranes aiming at contributing to the identification of the key factors that govern formation of ordered nanopatterns in polymer nanosystems. The project was coordinated by the Consiglio Nazionale delle Ricerche- Istituto di Chimica e Tecnologia dei Polimeri with Dr. Clara Silvestre as coordinator, (silvestre@ictp.cnr.it). A main information pool of NaPolyNet is the website: <http://www.napolynet.eu/> that provides information about project partners, results, equipment and expertise, events and database of characterization procedures, that still will continue to be active after the project end. NaPolyNet has fully achieved its objectives and technical goals with very valuable results obtained. To be cited:

- The creation and the setting of the European Open Laboratory (EOL-NaPolyNet) with unique equipment and expertises in the field of characterization of polymer nanostructure for advanced applications. (EOL) will continue to last beyond NaPolyNet closure, thanks to the high level of network among partners reached through NaPolyNet; The impact of the EOL is already demonstrated by the high number of joint publications on high rank journals and joint projects funded/submitted to national and international calls. The EOL facilities/expertises were exploit also by ESRs, that performed scientific stages hosted by NaPolyNet partners at the EOL location;
- The development of measurement strategies and methodologies for determination of the effect of nanofillers on structure formation in polymers, available at www.napolynet.eu;
- The preparation of a Database of European characterization procedures/Experts For Polymer Nanomaterials operational and available on the web page;
- The involvement of numerous young researchers (through the short demonstration visits and the training activities coming also from outside the partners institution) and the interest showed by several the SMEs on the project activity;
- The development of the DIN SPEC 91127: Temperature calibration of Differential Scanning Calorimeters for sample mass and scan rate that describes protocol of temperature calibration procedures for Fast Scanning Calorimeters for high to very high scan rates and low to very low sample masses respectively, thus complementing ISO 11357. This procedure was urgently needed as thermal history of polymers, and sample/product treatment can change their behaviour drastically, leading to deviating end properties;
- The contribution to the development of a coordinated, coherent and cost-effective deployment of resources in the field of nanomaterials within the EU values of sustainability, life cycle approach, precautionary principle and integrated European competitiveness and innovation;

In conclusion NaPolyNet brought together methodology, structure–characterization techniques, properties, health and environmental considerations in order to support the design of innovative and safe polymer nanomaterials with controlled structures and properties.

EOL-NaPolyNet broadens the pool of instruments and the base of expertises allowing researchers and producers to be updated with the developments in preparation and characterization tools for innovative and safe polymer nanomaterials

NaPolyNet has therefore constituted a successful pilot initiative aiming at contributing to the identification of the key factors that govern formation of ordered nanopatterns in polymer-based hybrid systems and is an example that it is not always necessary to have big-scale organizations of departments, universities and companies to reach competitive and innovative results, NaPolyNet demonstrated that the fundamental point is the synergistic combination of multidisciplinary teams and complimentary high level skill sets: networks of top-experts sharing EOL of instrumentation/expertises and working together, (almost) irrespective of the institute/company/country they are located. So it is suggested that the EU duplicates NaPolyNet schema, bringing together top-experts and their EOLs and combining their complimentary "excellence" in small and dedicated networks in order to stimulate fruitful cooperation.