VAMAS

Polymer Nanocomposites

Technical Work Area 33

Call for Participation

Project 1

Determination of the Shape, Size and Size Distribution of Nano-filler Particles

Objectives

The project aims to characterize nano-sized filler particles by determining their shape, chemical composition, purity, size and size distribution before and after compounding and processing them with polymers.

The initial efforts will be dedicated to the characterization of natural and synthetic clays, viz. inorganic, commercial clay, pre-intercalated organoclay, organoclay after compounding and/or processing with a polymer.

Background and Standardization needs

The worldwide use of Polymer Nanocomposites (PNC) in diverse industries (e.g., transportation, packaging, surface treatment) is already large and it is growing rapidly. However, there are no internationally recognized standards for PNC testing.

To design a product one must know the characteristics of the material, its processability, changes induced by processing and longevity.

The main goal of TWA-PNC is to standardize the essential experimental test methods for PNC.

Work Programme

This project will initially focus on natural and synthetic clays. Development of the method of clay characterization will proceed in three stages:

1. Determination of the initial shape, size and size distribution of inorganic clay particles
2. Determination of the nano-filler chemical composition and the presence of impurities in organoclay
3. Size and size distribution of organoclay after compounding and processing with polymer.

In the first phase, inorganic clays will be tested. In subsequent second and third phases, the organoclay and clays after compounding will be examined.

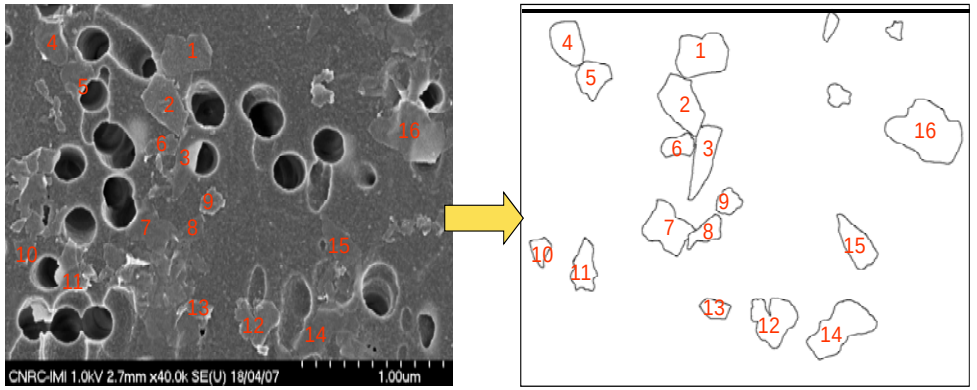

Figure 1: Cloisite-Na platelets contour tracing for statistical analysis of their lengths and widths

Deliverables and Dissemination

- Development of test methods for the characterization of nano-filler particles at any stage of their technological life-time,
- VAMAS Technical Report,
- Publications in scientific journals,
- ISO TC 229 links aimed at development of an ISO standard.

Funding

Participation is based on in-kind contributions from the partners.

Status

Interlaboratory trials currently in progress. Call for additional participants.

For more information on participation, please contact:

Dr. Norma GONZALEZ-ROJANO
Centro Nacional de Metrologia, CENAM , Mexico
Email: ngonzale@cenam.mx

Prof. Dr. Andreas SCHÖNHALS
Chair, VAMAS TWA 33
BAM Federal Institute for Materials Research and Testing, Germany
Email: Andreas.Schoenhals@bam.de

www.vamas.org
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