

Particle Tracking Analysis for particle counting

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Currently, there is a great interest in nanoparticle dispersions fuelled partly by commercial applications as well as regulatory requirements. A number of regulators [1-3] require the knowledge of number concentration of nanoparticles for their reporting schemes. Besides this compliance issue the applications in cosmetics, paints and pigments, environmental monitoring, material tagging and others require reliable methods for counting nanoparticles down to lower end of the nanoscale. Most of these applications are in nanodispersions of particles, droplets or bubbles. ISO committees (ISO TC229 [4] and ISO TC24/SC4 [5]) work closely on the development of a number of documents for nanodispersion characterisation. One of the key aspects is the work on particle counting that was avoided for years due to the lack of good method understanding as well as reference materials. This presentation will describe the background for particle counting methods and will focus on one particular technique – particle tracking analysis. ISO TC24/SC4 published and ISO 19430-1 [6] in 2016 and is following up with ISO 19430-2 focused on particle counting and number concentration using PTA. A report on this development will be given from the metrology perspective and the limitations of the method.

1. Recommendation on the definition of a nanomaterial (2011/696/EU)
2. French Declaration of nanomaterials (R-Nano.fr) Decree no. 2012-232 of 17 February 2012 on the annual declaration on substances at nanoscale in application of article R. 523-4 of the Environment code
3. La Belgique met en place un registre des nanomatériaux, Source: SPF Chancellerie du Premier Ministre - Direction générale Communication externe <http://www.presscenter.org/fr/pressrelease/20140208/la-belgique-met-en-place-un-registre-des-nanomateriaux> 07/02/2014
4. ISO/TC 229 Nanotechnologies <https://www.iso.org/committee/381983.html>
5. ISO/TC 24/SC 4 Particle characterization <https://www.iso.org/committee/47176.html>
6. ISO 19430:2016 Particle size analysis -- Particle tracking analysis (PTA) method (2016) <https://www.iso.org/standard/64890.html> Lead by Dr Denis Koltsov