

Wrap up of industry perspectives in developing a measurement strategy for nanomaterials

Dr. Martin Reuter/ VCI

Workshop NanoDefine 8th February 2016

Wrap up of industry perspectives (1/2)

► Electron Microscopy (Hempelmann/ Lanxess)

Challenges:

Analysing irregular particles & agglomerates/aggregates with EM, sample preparation, manual procedures

Applicability: *not applicable for non-experts, no direct access for SME, expensive, experience and training as a strong prerequisite*

- no set of parameters to get evaluated results
- no standard procedures for evaluation, no automatic procedures for industry products (aggr./agglom.)
- new practical approaches necessary – e.g. family approach

► Sample Preparation (Kund/Clariant)

Challenges:

Dispersion process is THE key element for particle size measurements (results strongly dependent on dispersion energy, media etc.)

Applicability: *Sample preparation is only applicable with SOPs*

- *Development of SOPs esp. for dispersions needed (problem of material specific dependencies – JRC/Eurocolour Report)*



Wrap up of industry perspectives (2/2)

► Measurement of particles (Wohleben/BASF)

Challenges:

Screening methods to make use of tiered strategy for intermediates and high number of products

Applicability: *Simplifications like „product families“ necessary: adaption for SME & Co?, reconciliation of metrics ...*

➔ *TEM-calibrated VSSA as screening method for specific product families*

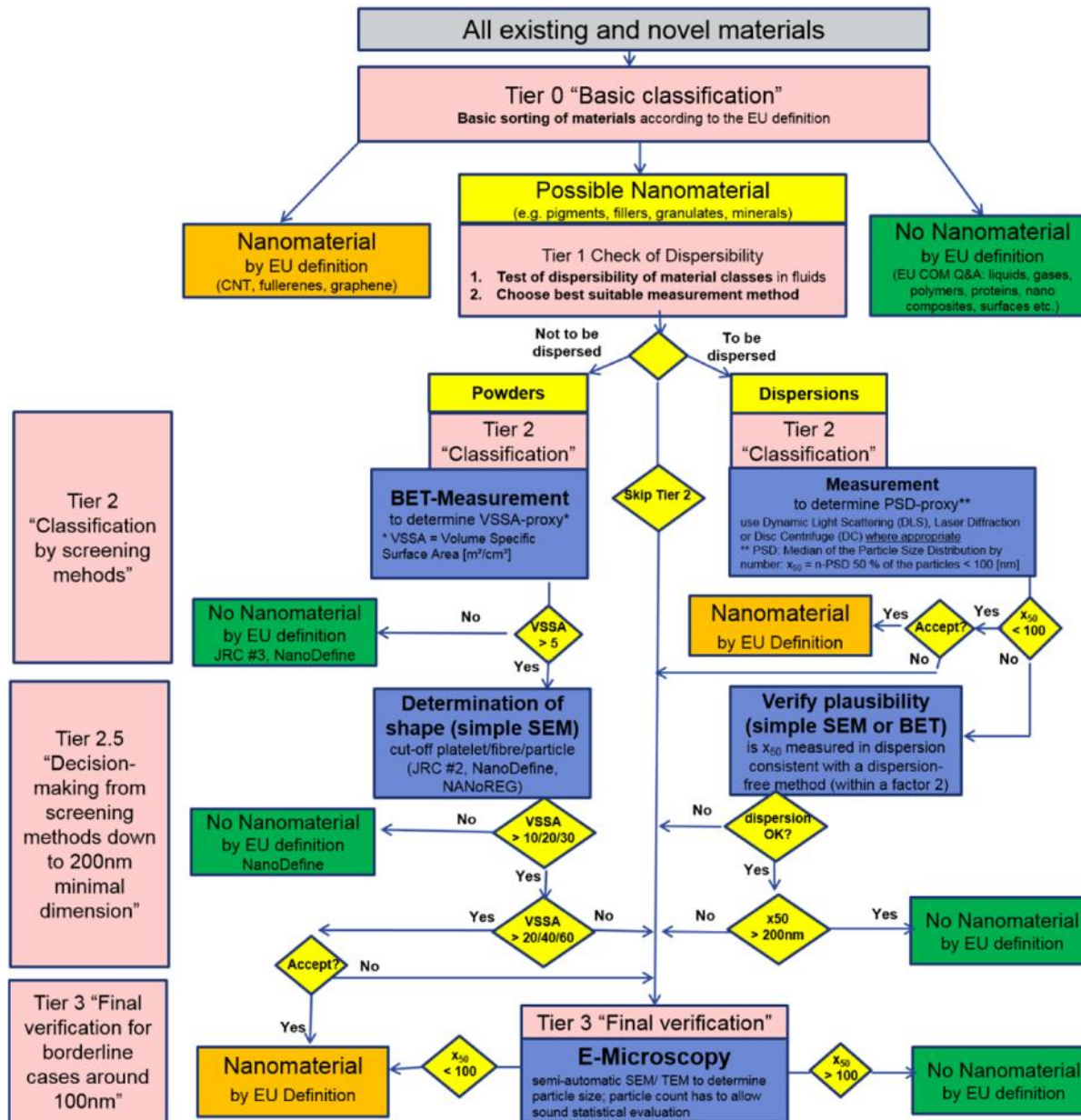
► QM of counting methods, evaluation of the performance of screening methods (Hodoroaba/BAM, Stintz/TUD)

Challenges: multi modal and aggregated/agglomerated particles

Applicability: *Proposal e.g. SEM of powders by dry sample preparation, VSSA + SEM screening*



Why a classification & measurement strategy?



Tier 2 "Classification by screening methods"

Tier 2.5 "Decision-making from screening methods down to 200nm minimal dimension"

Tier 3 "Final verification for borderline cases around 100nm"

... because of

- 10-thousands intermediates
- nearly a mio. products

but

- limited expert capacities

Conclusions & How to go on? Inspiring DISCUSSION

- Overall observations:
 - Project results very welcome
 - Industry & science: Aiming at the same – but still on different positions
- NanoDefine promises solutions – all problems (will be) solved?

Applicability

EXAMPLE: **screening methods VSSA + simple SEM on dried powders**

- Messages from industry @ NanoDefine (& @ policy)
 - Re-evaluation of applicability
 - Focus on sample preparation
 - Incorporation of TEM-calibrated screening methods like VSSA for specific product families
 - ... in DISCUSSION

