Identification and quantification of the surface chemistry and coatings on nano- and microscale materials new Guidance Document

with support from
G4N & NH

in support of a
new OECD Guidance Document

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PTB (NH), JRC (G4N), BAM (NANORIGO)

International Workshop
on
Gap Analysis and Data Requirement
to support
OECD Test Guideline and Guidance Document Development

Thursday 4th of November 2020 Session 2 – Stream 2

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This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 885931

Surface Chemistry analysis using the “Decision Tree”- Approach

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Summary

Structured, tiered approach using the „Decision-Tree“

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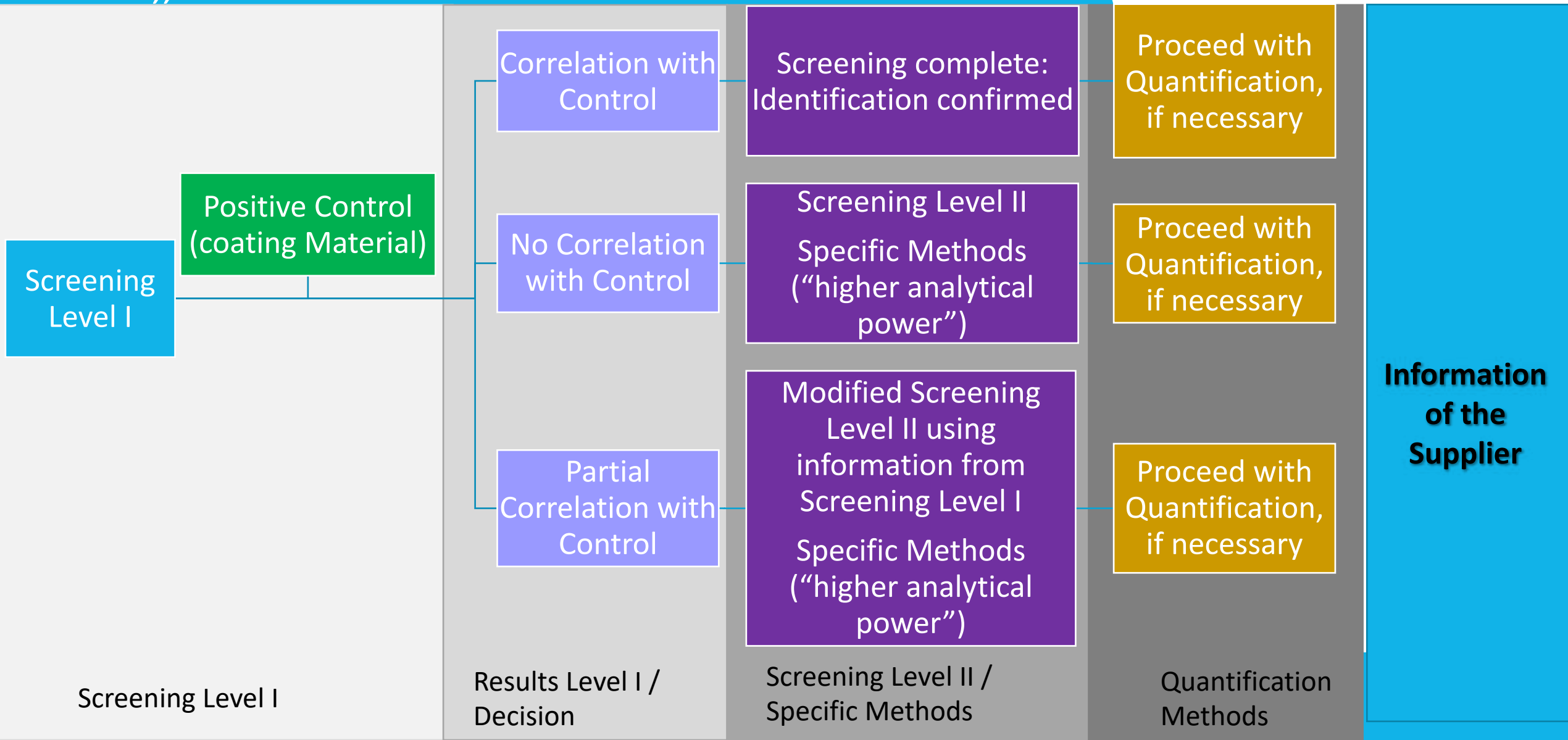

Discussion points:
Surface Chemistry Determination

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Potential measurands for surface chemistry, surface functionalisation and surface coating testing

- nature of coating, molecular weight, elements and functional groups of the coating

What measurands would be preferable, but are non-essential?

- amount and thickness of coating, chemical binding type, which is often difficult to determine,
- Need for certified reference materials / reference materials to improve the measurements

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Discussion points: Surface Chemistry Determination

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Clarification of essential terms

- Need for definitions of “Surface” and “Bulk” material

Other issues

- Include information from the supplier
- To which extent should the intercomparison be quantitative?

  Additional analytical methods: NMR, loss on ignition
- Which test materials should be included in round 2?

  NRCWE-015: $CaCO_3$/fatty acids, derivatized C_{60} fullerenes, Nanofil5: nanoclay/QAC, same core with different coatings?

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Announcement of the round robin testing for surface chemistry

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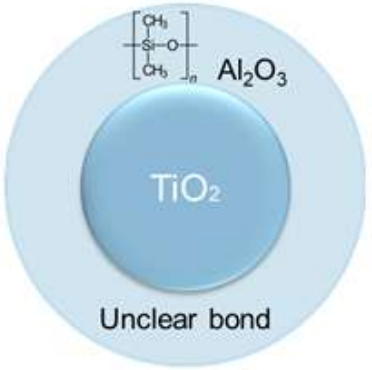
- Planned time lines for round robin (March 2021 -> October 2021); 2 Test materials (as a start, others to follow)
  - March 2021: →SOP distribution and clarifications
  - April 2021: →Distribution of test materials
  - May 2021: → Expected start of testing
  - October 2021: → Expected completion of testing



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NRCWE-009

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First outline for the review paper

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Identification and quantification of the surface chemistry and coatings on nano- and microscale materials

1. Introduction

1.1. Regulatory and legal issues impacted by surface-functionalised nanomaterials

1.2. Nanomaterials under REACH

1.3. Amendments to the annexes

1.4. New Endpoint

1.5. Concepts of nanoforms and similar sets of nanoforms

1.6. Risk assessment from the surface-chemistry point of view

2. Definitions (Surface chemistry, Surface funtionalisation, Surface coating)

3. Analytical Techniques

3.1. Measuring Principle

3.2. General Remarks, Limitations, Pitfalls

4. Case Studies

4.1. Case Study I (BAM)

4.2. Case Study II (BfR)

5. Outlook

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Participation in Review paper

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Participation in interlaboratory comparison

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