

# The EU NanoSafety Cluster Use Case

eNanoMapper, NanoCommons  
Brussels, 2018-06-29, EMO Workshop

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# Common solutions for the community

NanoReg<sup>2</sup>



OpenRiskNet



# The EU NanoSafety Cluster

<https://www.nanosafetycluster.eu/>



- [NSC Dissemination Group](#)
- [WG A: Communication, Training and Education](#)
- [WG B: Materials and Standards WG](#)
- [WG C: Exposure & Hazard AssessmentWG](#)
- [WG D: Models and Tools for Risk Assessment WG](#)
- [WG E: Safer by Design, Innovation and RegulationWG](#)
- [WG F: Data Management](#)

[www.nanosafetycluster.eu](http://www.nanosafetycluster.eu) Issue No. 11 | Winter 2018

## Welcome to the NSC Newsletter-Winter 2018

Thank you once again for all your contributions and your continued support of the NSC Newsletter.

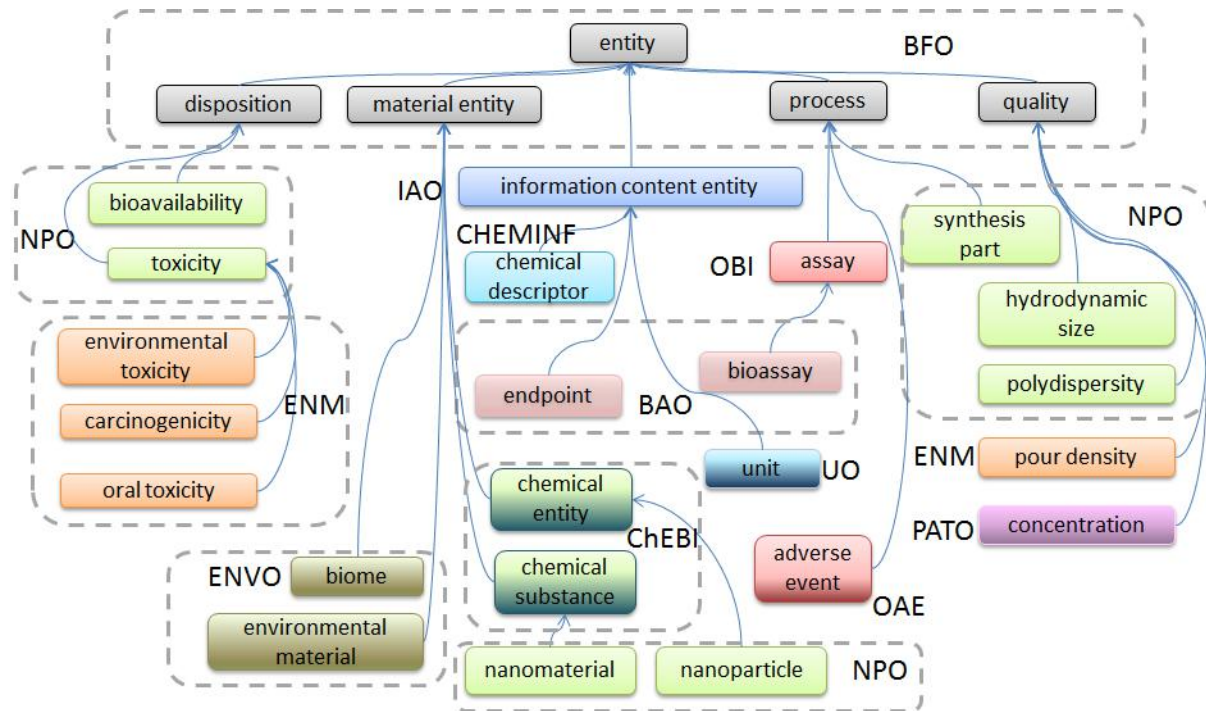
Some of the highlights in this issue include news about the [NanoSafety Cluster meeting in Athens](#) next month, in conjunction with the next NanoFASE Project meeting. The NSC event will be looking at areas of synergy and overlap for cross-project contributions to the H2020 midterm review, and the Dissemination WG will be focusing on the added value of the Cluster to nanosafety stakeholders. The WG has successfully applied for the [Common Dissemination Booster service](#), which will benefit all NSC Projects.

[Pages 4-5](#) profile two new large-scale NSC projects which have just kicked-off: H2020 GRACIOUS and BIORIMA, both of which are central to NSC activities in the development of classification frameworks for risk assessment of nms and safer design, as well as risk management framework for nano-biomaterials. Later in the newsletter ([page 22](#)) is an invitation from BIORIMA to its first training school on Risk Assessment and Risk Management of Nano-Biomaterials in Medical Applications which takes place in April.

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# The eNanoMapper ontology

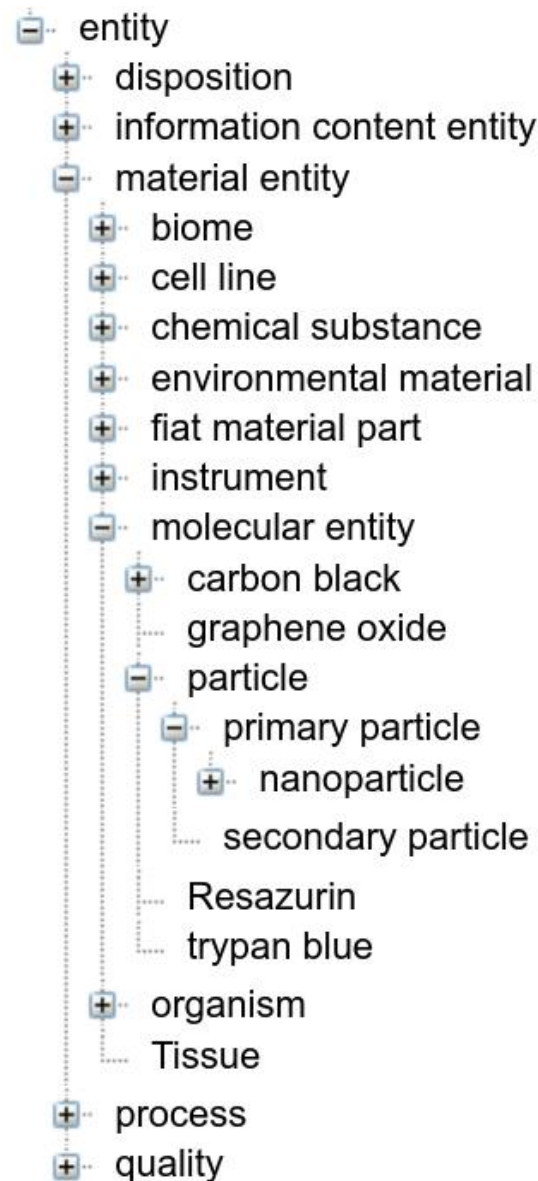
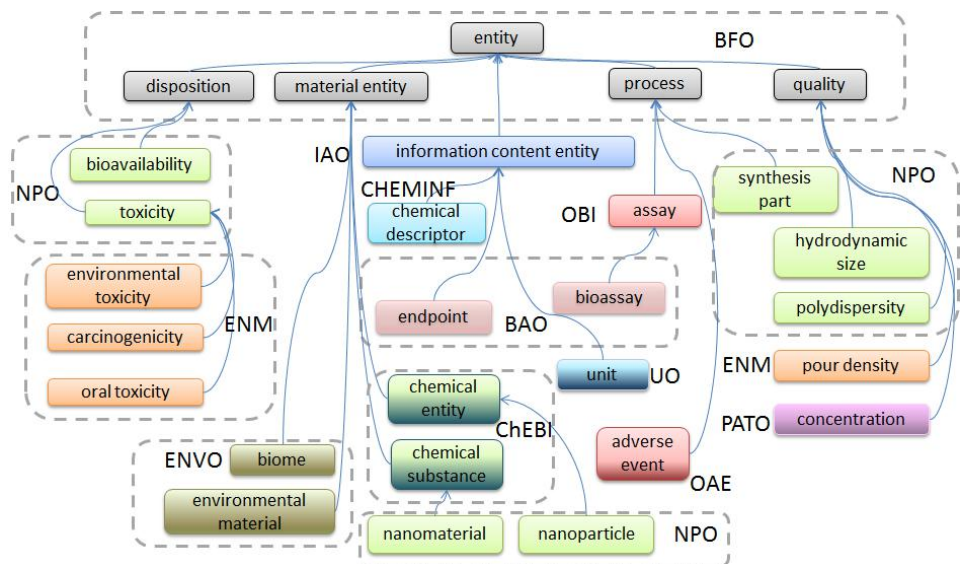


Hastings, J.; Jeliaskova, N.; Owen, G.; Tsiliki, G.; Munteanu, C. R.; Steinbeck, C.; Willighagen, E. eNanoMapper: harnessing ontologies to enable data integration for nanomaterial risk assessment. *J. Biomed. Semantics* 2015, 6, 10 DOI: [10.1186/s13326-015-0005-5](https://doi.org/10.1186/s13326-015-0005-5).

N. Jeliaskova et al., The eNanoMapper database for nanomaterial safety information, *Beilstein J. Nanotechnol.*, vol. 6, pp. 1609–1634, Jul. 2015. 10.3762/bjnano.6.165



# The eNanoMapper ontology



Hastings, J.; Jeliaskova, N.; Owen, G.; Tsiliki, G.; Munteanu, C. R.; Steinbeck, C.; Willighagen, E. eNanoMapper: harnessing ontologies to enable data integration for nanomaterial risk assessment. *J. Biomed. Semantics* 2015, 6, 10 DOI: [10.1186/s13326-015-0005-5](https://doi.org/10.1186/s13326-015-0005-5).

# The Building with *Slimmer*

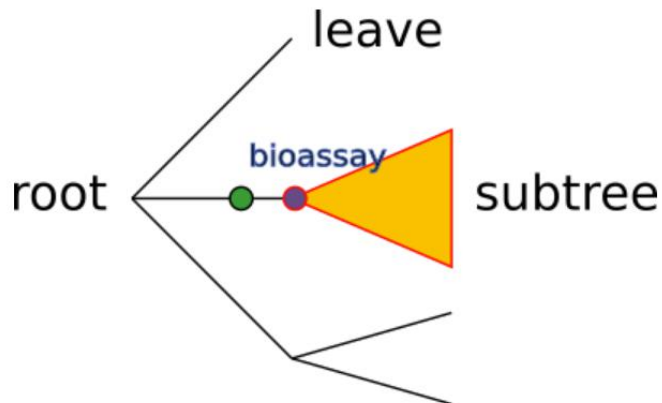
- Configuration to slice upstream ontologies (with OWLAPI)

## The Syntax

Each instruction has the same structure, the same syntax, organized in layers:

```
+D(http://purl.obolibrary.org/obo/OBI\_0000070):http://www.bioassayontology.org/bao#BAO\_0000015 bioassay
```

We can see here basically the five layers (red, yellow, green, purple, and blue) and in semi-colon (light blue) to separate two layers. If you consider that an ontology is often a hierarchical tree of terms, with one root node, spreading down, ending in leave nodes, the above instruction could be visualized as this:



Hastings, J.; Jeliaskova, N.; Owen, G.; Tsiliki, G.; Munteanu, C. R.; Steinbeck, C.; Willighagen, E. eNanoMapper: harnessing ontologies to enable data integration for nanomaterial risk assessment. *J. Biomed. Semantics* 2015, 6, 10 DOI: [10.1186/s13326-015-0005-5](https://doi.org/10.1186/s13326-015-0005-5).

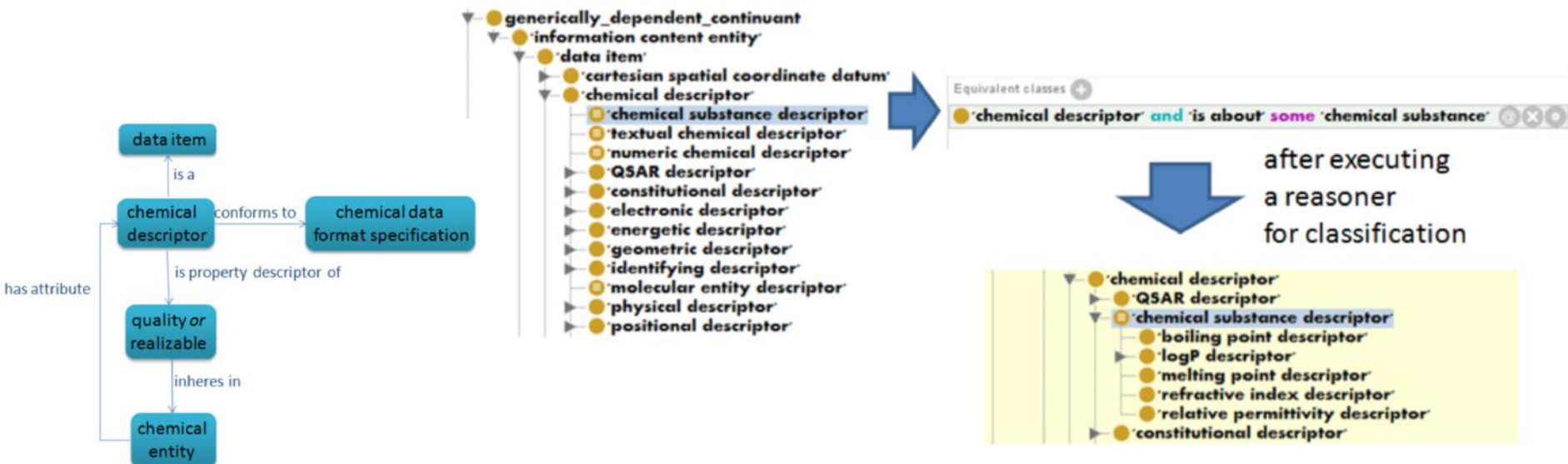
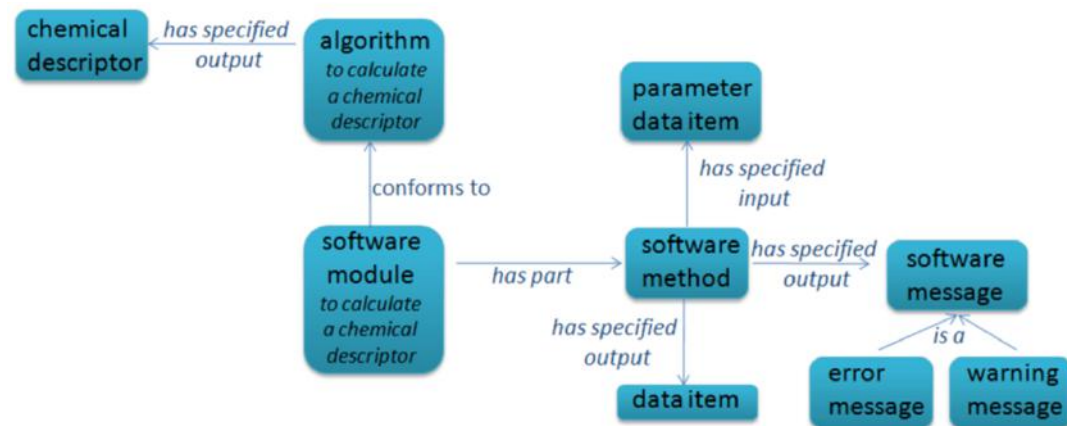
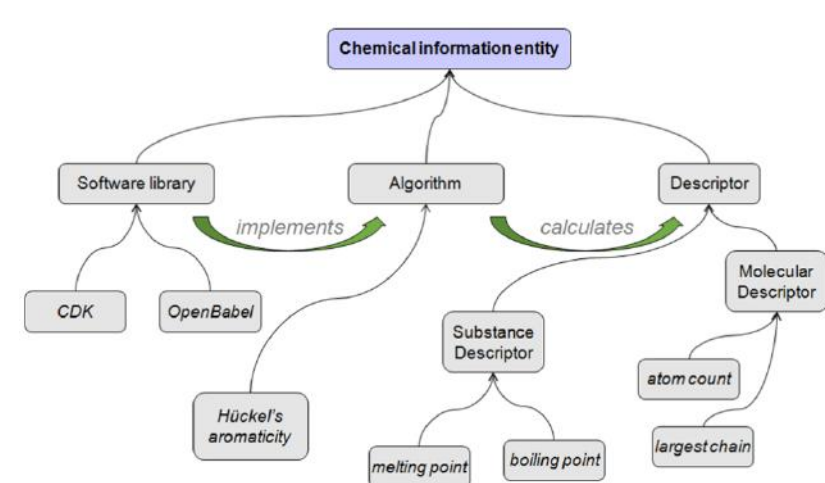
- Caveat: does not work for

# The Chemical Information Ontology: Provenance and Disambiguation for Chemical Data on the Biological Semantic Web

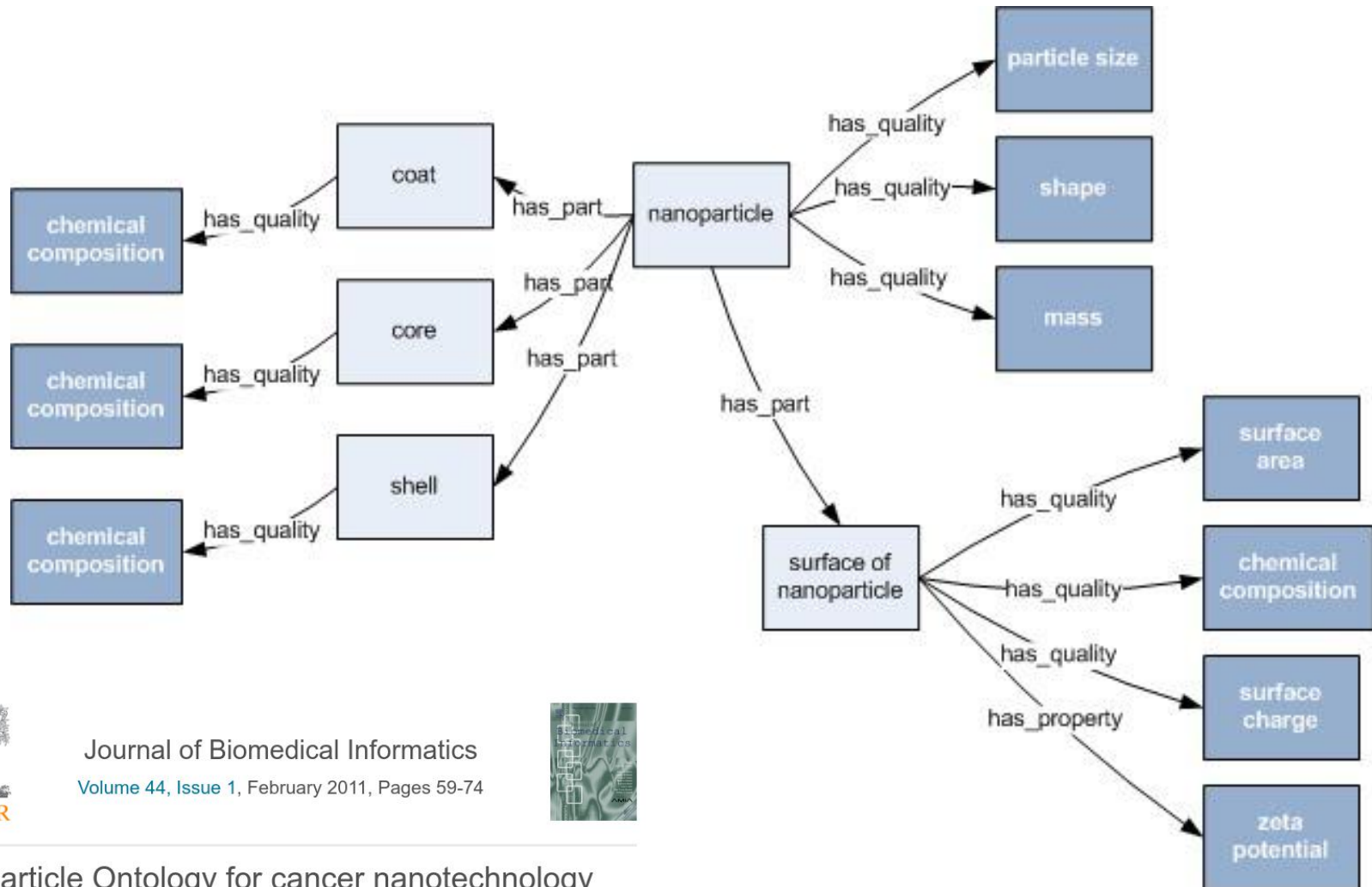
Janna Hastings, Leonid Chepelev, Egon Willighagen, Nico Adams, Christoph Steinbeck, Michel Dumontier

Published: October 3, 2011 • <https://doi.org/10.1371/journal.pone.0025513>

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# This NanoParticle Ontology (NPO)





# Conclusions

- The “eNanoMapper” ontology
  - Application ontology, reusing other ontologies
    - Based on the BFO upper ontology
  - Used by EU NanoSafety Cluster
    - Mostly as dictionary at this moment
  - Automated build system to update new version of upstream ontologies
  - Current limitations:
    - Predicates don't work well yet
    - Modelling not covered enough (a bit with CHEMINF)
- Wishes:
  - Better ontological modelling of, well, modelling materials
  - EMO as upstream ontology

# Acknowledgments

- [eNanoMapper](#), EC FP7, #604134
  - Janna Hastings
- [NanoCommons](#), EC H2020, #731032
- [OpenRiskNet](#), EC H2020, #731075



(and all partners)

- [EU NanoSafety Cluster](#) (particularly WG F, formerly WG 4)

eNanoMapper Working Draft



eNanoMapper Ontology IRIs for the JRC representative industrial nanomaterials

eNanoMapper Working Draft 20 January 2018

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<http://spacs.enanomapper.org/2018/WD-irc-20180120/>  
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## Abstract

The [JRC representative industrial nanomaterials](#) are a series of nanomaterials used in the European nanosafety community for research [Zolano2016]. eNanoMapper is developing an ontology to be used as common language by this community. This document links the JRC materials to specific terms in the ontology and provides identifiers for each of them. The sources can be found at <https://github.com/enanomapper/specifications>.

eNanoMapper Working Draft



eNanoMapper Ontology IRIs for the OECD nanomaterials

eNanoMapper Working Draft 18 October 2017

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## Abstract

The OECD has a list of nanomaterials of interest. eNanoMapper is developing an ontology to be used as common language by this community. This document links the OECD materials to specific terms in the ontology and provides identifiers for each of them.

## Status of This Document

This document is a specification by eNanoMapper. It has no official standing of any kind and does not represent the support or consensus of any standards organisation.

A screenshot of the eNanoMapper web application. The page shows a search bar at the top right with the ECHA logo. Below the search bar is a navigation menu with tabs for "General Information", "Uses", "Safety", "Regulation", "International activities", and "Research &amp; Innovation". The main content area displays a list of nanomaterials with filtering options on the left. Two entries are visible: "JRCNM400)a [NM-40] (MWCNT 64.2 nm) multi-walled carbon nanotube" and "JRCNM402)a [NM-40] (MWCNT 12.7 nm) multi-walled carbon nanotube". Each entry includes a brief description and a "more" link.