# Prioritising nano- and micro-particles - identification of physicochemical properties relevant for toxicity to *Raphidocelis subcapitata*

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## Introduction

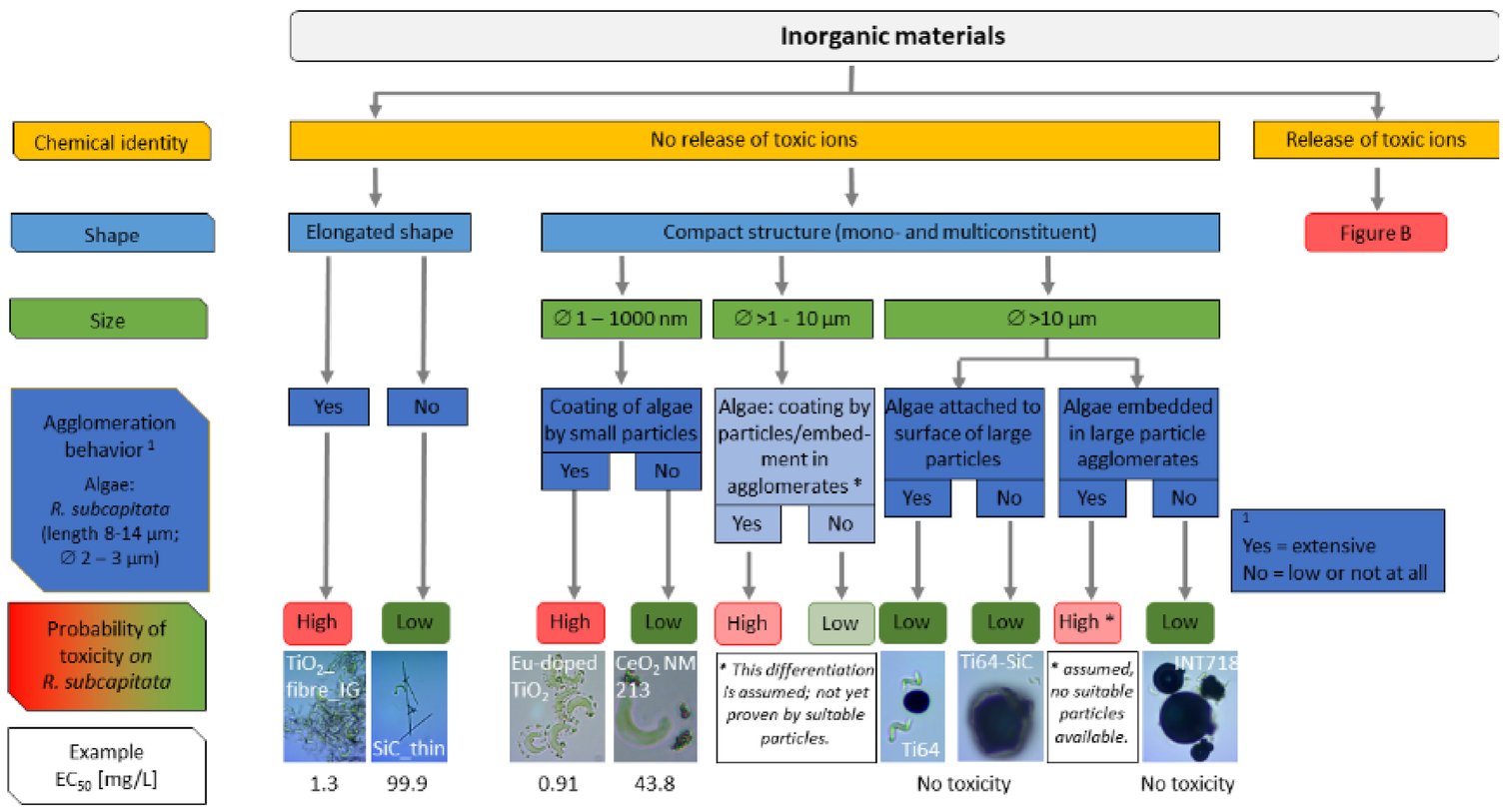
Advanced/innovative materials are an undefined group of nano- and micro-particles encompassing diverse material compositions, structures and combinations. Due to their unique properties that enable specific functions during applications, there are concerns about unexpected hazards to humans and the environment.

## Aim

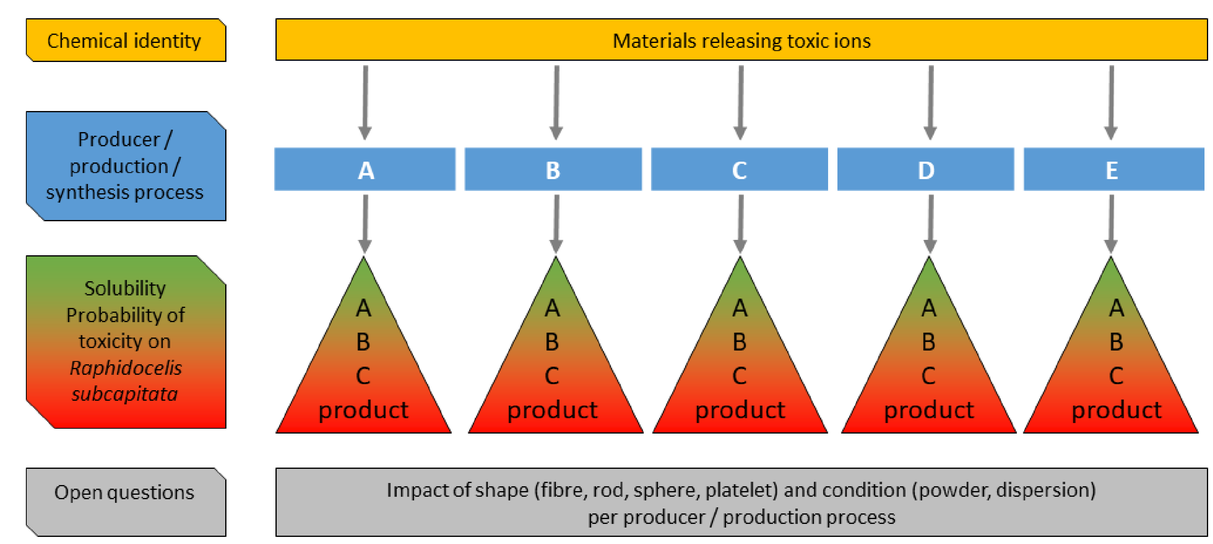
- Investigation of 45 nano- and micro-particles of various chemical identities (polymers and inorganic materials; single constituents and complex compositions; materials releasing toxic ions and others), morphologies (spheroidal, cubic, flaky, elongated/fibrous) and sizes (10 nm – 38 µm) applying *Raphidocelis subcapitata* algae growth inhibition according to OECD test guidelines 201, and extensive material characterisation.
- Identification of indicators of concern
- Development of charts to indicate the expected toxicity of advanced/innovative materials toward algae.

## Result

A




B




## Conclusion

- Assessment of materials that do not release toxic ions is possible.
- Clustering of particles releasing toxic ions is still limited, and further studies are required. For clustering the particles, the impacts of morphology, condition (powder, dispersion) and production process, including the chemicals used, must be investigated.

## References

*Hund-Rinke K., Broßell D., Eilebrecht S., Schlich K., Schlinkert R., Steska T., Wolf C., Kühnel D.: et. al: Prioritising nano- and microparticles - identification of physicochemical properties relevant for toxicity to Raphidocelis subcapitata and Daphnia magna. Environmental Science Europe 34:116. https://doi.org/10.1186/s12302-022-00695-z.*

*Kühnel, D., Schlich K., Steska T. Nickel C., Wohlleben W., Hund-Rinke K.: Polymers of low concern? Assessment of microplastic particles regarding their toxicity on Raphidocelis subcapitata and Daphnia magna. submitted*

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