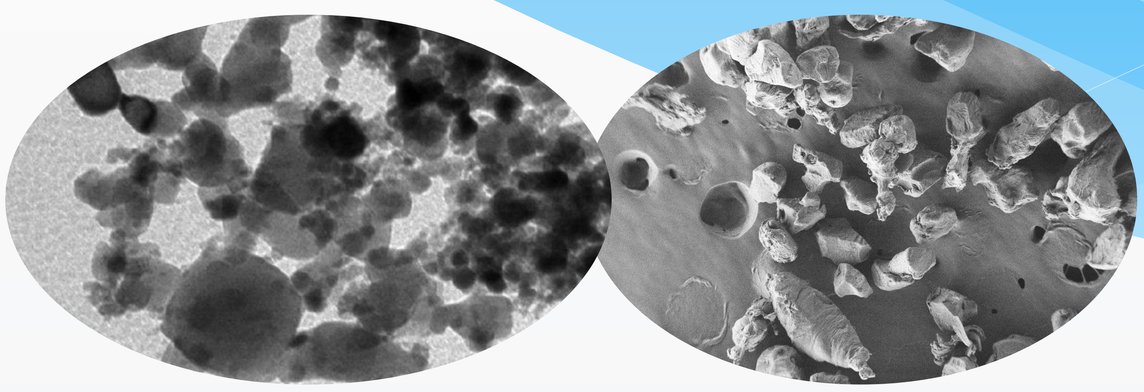
ADVERSE EFFECTS OF PARTICLES: 2017 STATE-OF-THE-ART OF ENGINEERED NANOPARTICLES AS A PLATFORM FOR MICRO-NANOPLASTICS RESEARCH

Anita Jemec Kokalj[1], Dana Kühnel[2]

[1]Biotechnical Faculty, University of Ljubljana, Večna pot 111, SI-1000 Ljubljana, Slovenia
[2]Helmholtz-Centre for Environmental Research - UFZ, Department of Bioanalytical Ecotoxicology, Permoserstr. 15, 04318 Leipzig, Germany
E-mail contacts: ***anita.jemec@bf.uni-lj.si; dana.kuehnel@ufz.de***

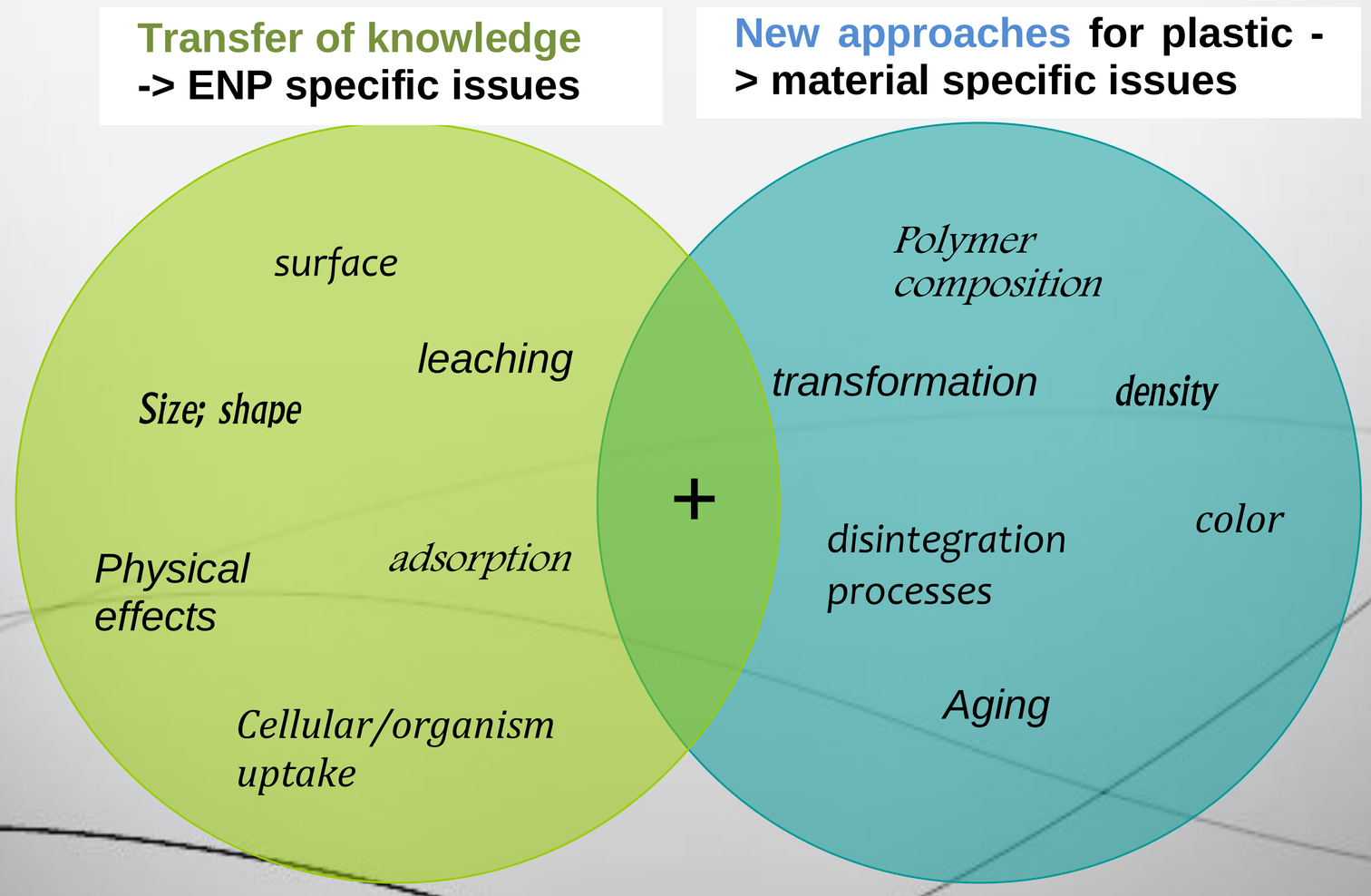
THE AIM: is to (i) present the state-of-the-art in the field of environmental nanotoxicity with focus on the link between the properties of ENP and the observed adverse effects and (ii) bridge this existing knowledge to the emerging environmental toxicology of micro-nanoplastics. As the scope of this SETAC session describes, cross- fertilisation between these two fields of of environmental toxicology is necessary to successfully implement the knowledge already gained through numerous projects and avoid duplication of incorrect assumptions.



Two sides of the same coin?

MAIN CONCLUSIONS FROM NANOTOXICOLOGY

- ***Is the effect particle-size dependent?*** *Not exclusively. Also depends on other properties .*
- ***The role of dissolution in promoting an effect.*** Effects of metal oxide ENP are caused by dissolved metal ions.
- ***High adsorption properties of particles.*** *Highly adsorptive for organisms' surface as well as biomolecules. Eco-corona of ENP may have a role in effect.*
- ***Aging of particles.*** *Transformation of particles occurs in nature as well as during storage. Particle properties should be regularly characterised.*



CONCLUSIONS: It is assumed that for toxicity studies most transfer of knowledge will be possible with regard to particle specific issues, as here extensive experience with a number of aquatic and terrestrial test systems exists. However, all specifics of the plastic material, and their implications for toxicity testing will require the generation of new knowledge by novel approaches.

ACKNOWLEDGEMENTS: NANOVALID Grant No. 263147