

# THE POTENTIAL IMPACT OF MICROPLASTIC ON THE FRESHWATER TEST ORGANISMS

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**THE AIM:** Microplastics (MPs); plastic fragments smaller than 5 mm; are considered an emerging global issue by various experts and international institutions. The main concern is that these smaller particles may be ingested throughout the food web more readily than larger particles. The aim of this work was to investigate the effect of microplastic extracted from a personal care product (crème peeling) on two freshwater test systems: crustacean water flea *Daphnia magna* and floating plant duckweed *Lemna minor*.

## EXPERIMENTAL SET-UP and RESULTS

**48 h acute test, 100 mg/L MPs; WITH AND WITHOUT ORGANIC MATTER (TOC = 10 mg/L)**

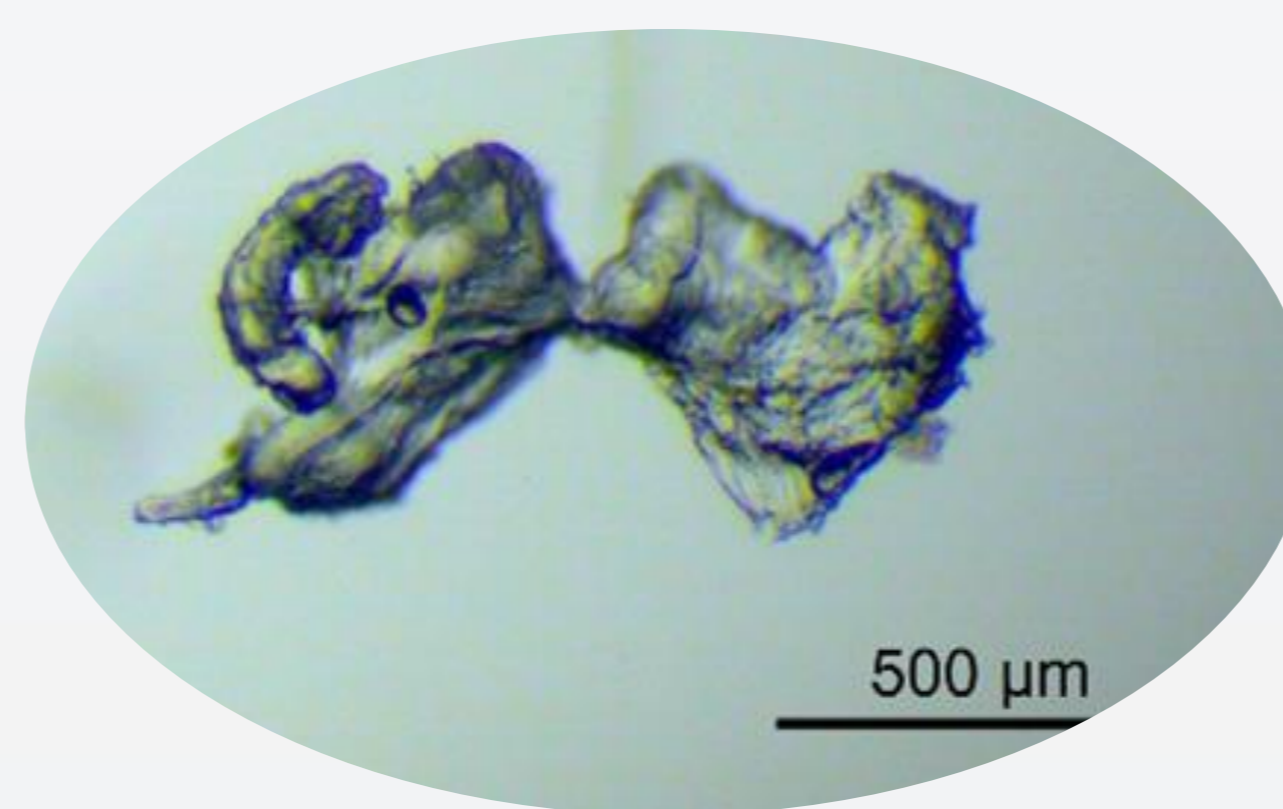
- No ingestion of MPs
- No adsorption of MPs
- No effect on the swimming and survival



crustacean water flea *Daphnia magna*



extraction



### MICROPLASTIC PROPERTIES

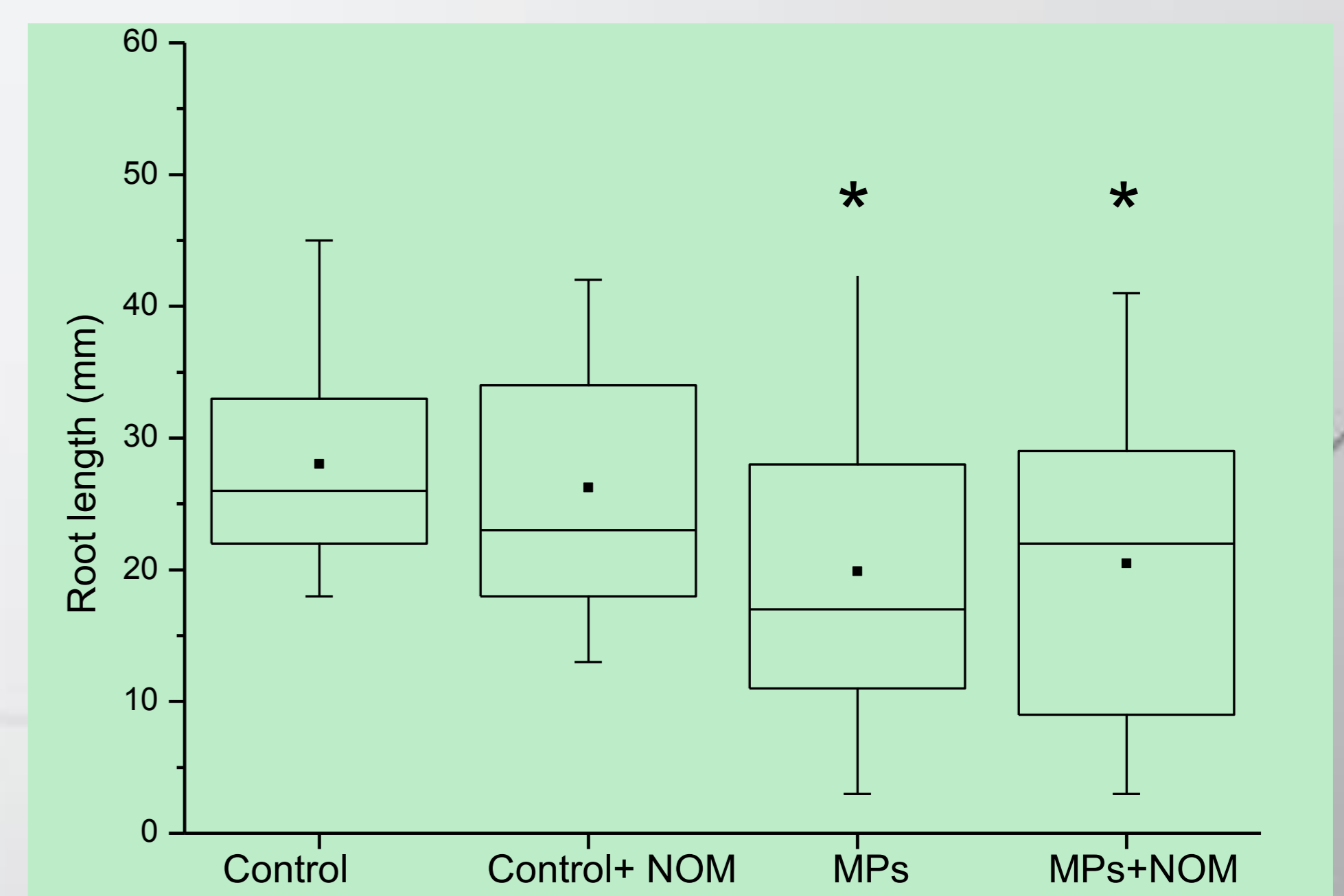
The particles are made of polyethylene. The size of the particles is in a wide range up to 1000 µm, the majority of particles being in range from 30-100 µm with mean size 71.3 µm (according to number distribution).

Plant duckweed *Lemna minor*

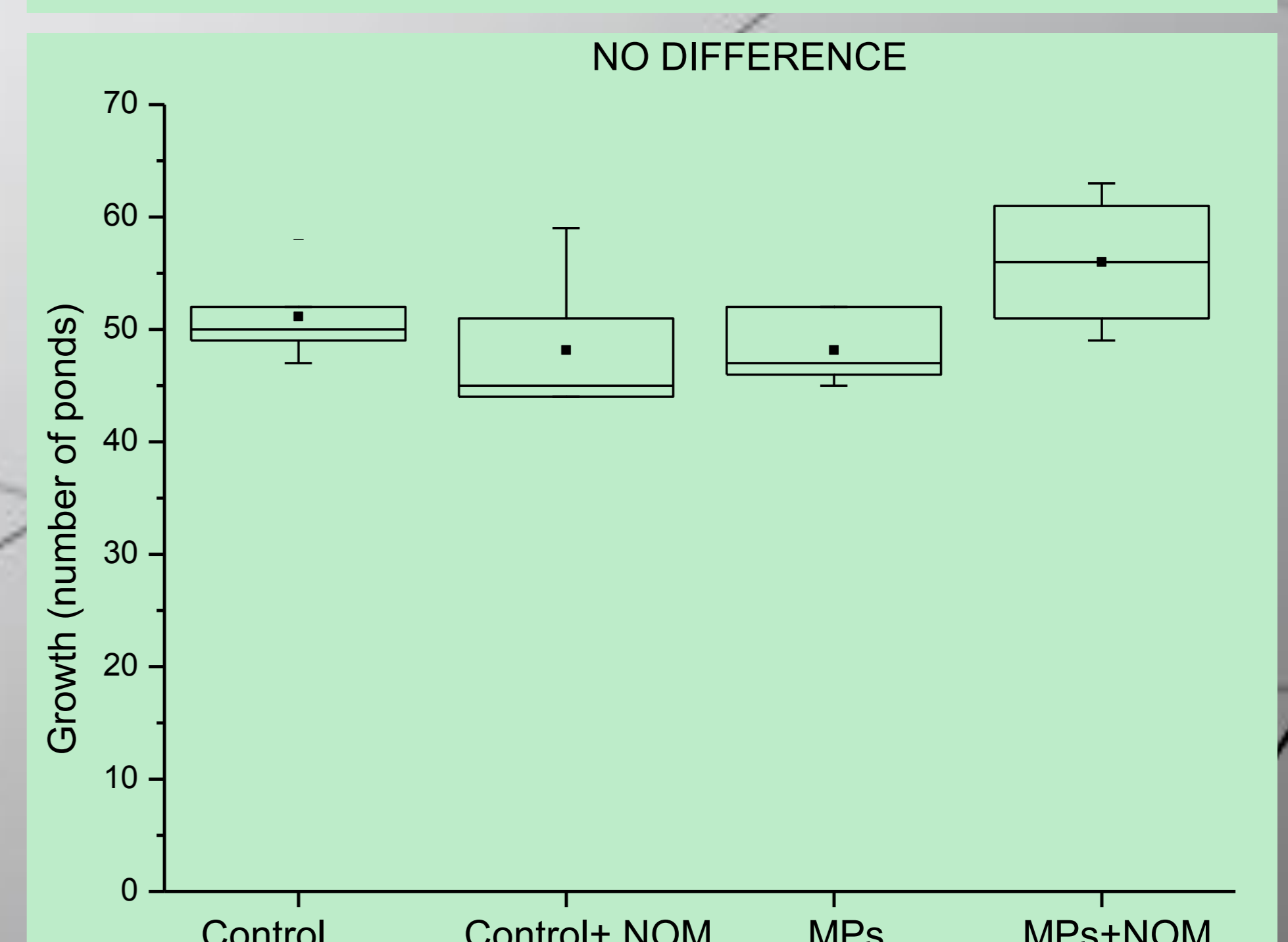
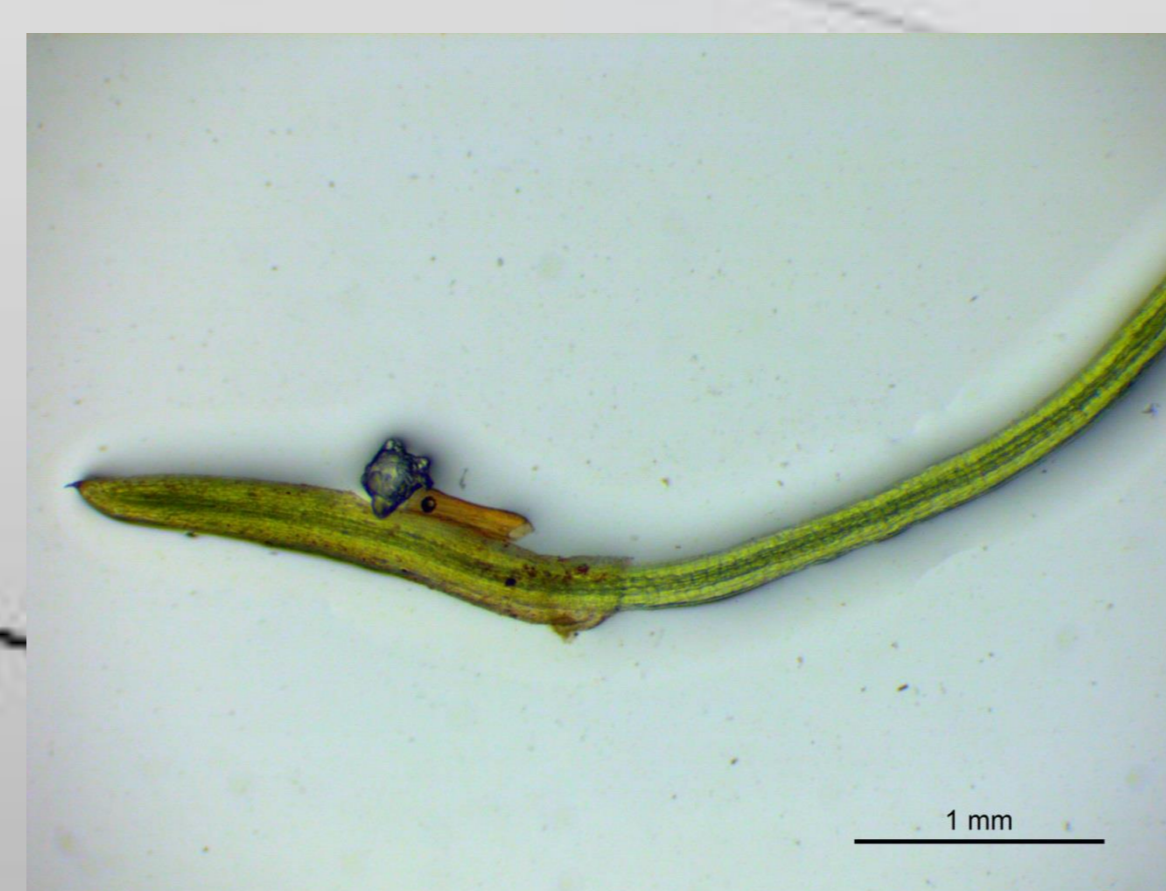
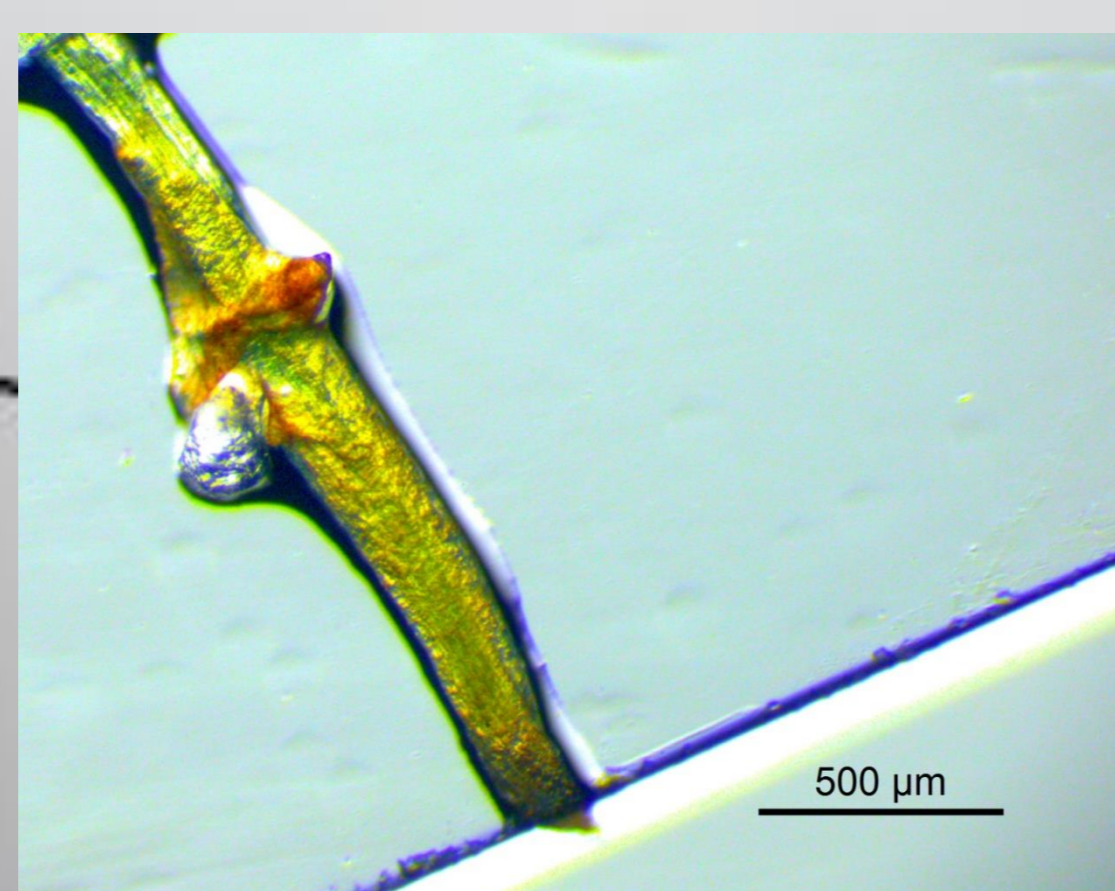


**7 days test exposure, 100 mg/L MPs, WITH AND WITHOUT ORGANIC MATTER (TOC = 10 mg/L).**

- No effect on plant growth
- No effect on chlorophyll concentration in leaves
- Adsorption of MPs on the roots
- **EFFECT on root growth- decreased**



Roots of *Lemna minor*- tissue damage is visible



## CONCLUSIONS:

- MPs in size around 100 µm had no effect on daphnids
- MPs had no effect on growth of *Lemna minor* leaves, but considerably affected the ROOT LENGTH. This is because the plant was in contact with the MPs floating on top of the water.
- Further work needs to be done to investigate the effects of MPs of different sizes and composition.