

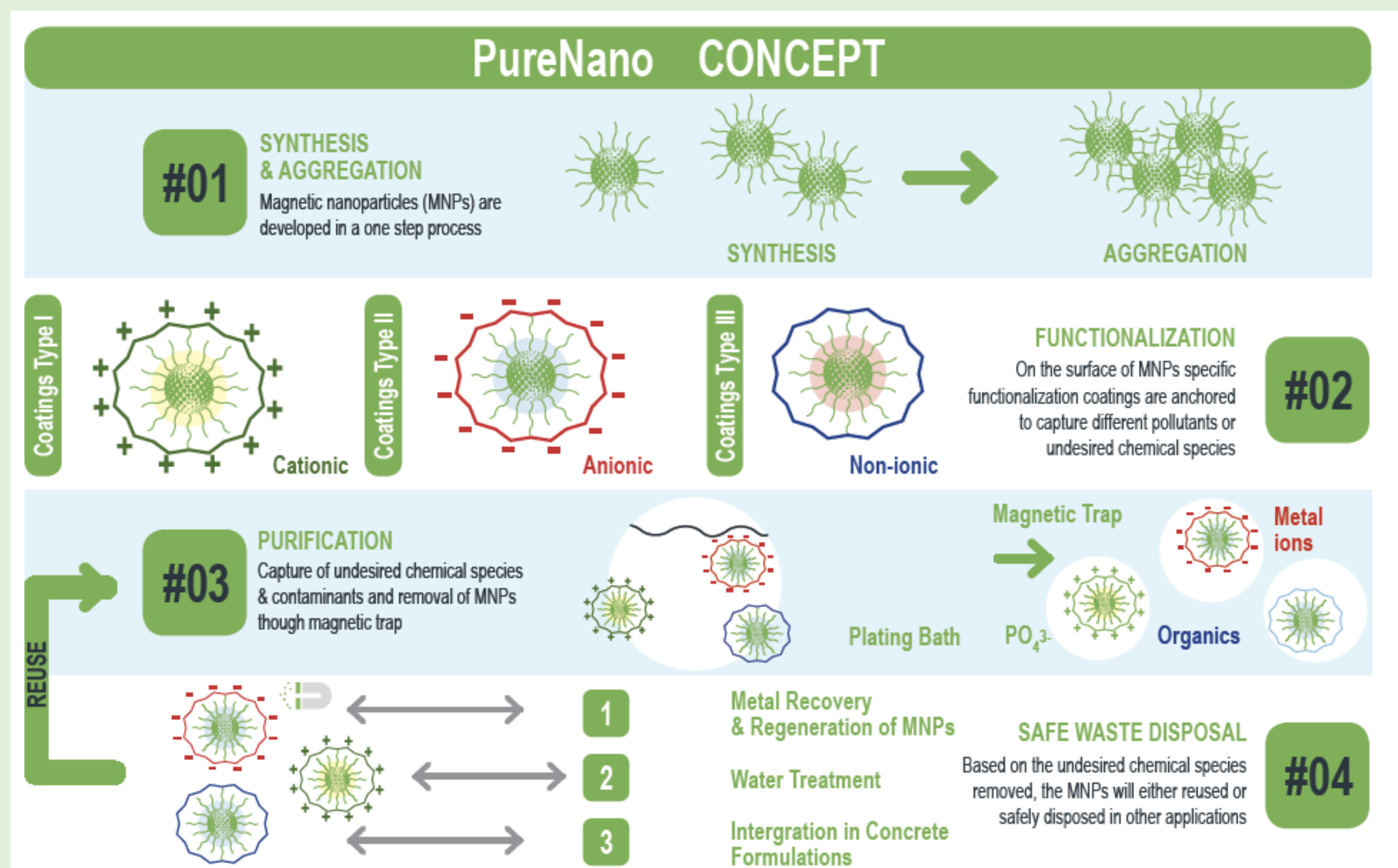
## FUNCTIONALIZED MAGNETIC NANOPARTICLES AND NANOPARTICLE AGGREGATES ENABLE THE REGENERATION AND REUSE OF SPENT PLATING BATHS

A. Ahniyaz<sup>a</sup>, A. Sugunan<sup>a</sup>, L. Magagnin<sup>b</sup>, C. Kostoula<sup>b</sup>, R. Pesce<sup>c</sup>, J. Buzón Moreno<sup>d</sup>, M. Tripiana<sup>d</sup>, A. Lara<sup>d</sup>, C. Matos<sup>e</sup>, G. Carmona-Aparicio<sup>e</sup>, A. Carminat<sup>f</sup>, C. Onorato<sup>g</sup>, I. Deligkiozi<sup>g</sup>, C. Panagiotopoulou<sup>h</sup>, D. Kosmidi<sup>h</sup>, L. Sakellariou<sup>h</sup>, I. Angelou<sup>h</sup>, M. Taxiarchou<sup>h</sup>, A. Zoikis Karathanasis<sup>i</sup>, E. Papaioannou<sup>i</sup>, A. Bairamis<sup>i</sup>, E. Grillo<sup>j</sup>, F. Buttafava<sup>j</sup>, E. Travaini<sup>k</sup>, N. Kampakas<sup>l</sup>

<sup>a</sup>RISE, Sweden; <sup>b</sup>Politecnico di Milano, Italy; <sup>c</sup>CaptiveS, Italy; <sup>d</sup>IDENER, Spain; <sup>e</sup>ISQ, Portugal; <sup>f</sup>GASER, Italy; <sup>g</sup>AXIA Innovation, Germany; <sup>h</sup>NTUA, Greece; <sup>i</sup>Creative Nano, Greece; <sup>j</sup>Tecnochimica, Italy; <sup>k</sup>ASFIMET, Italy; <sup>l</sup>Kampakas, Greece.

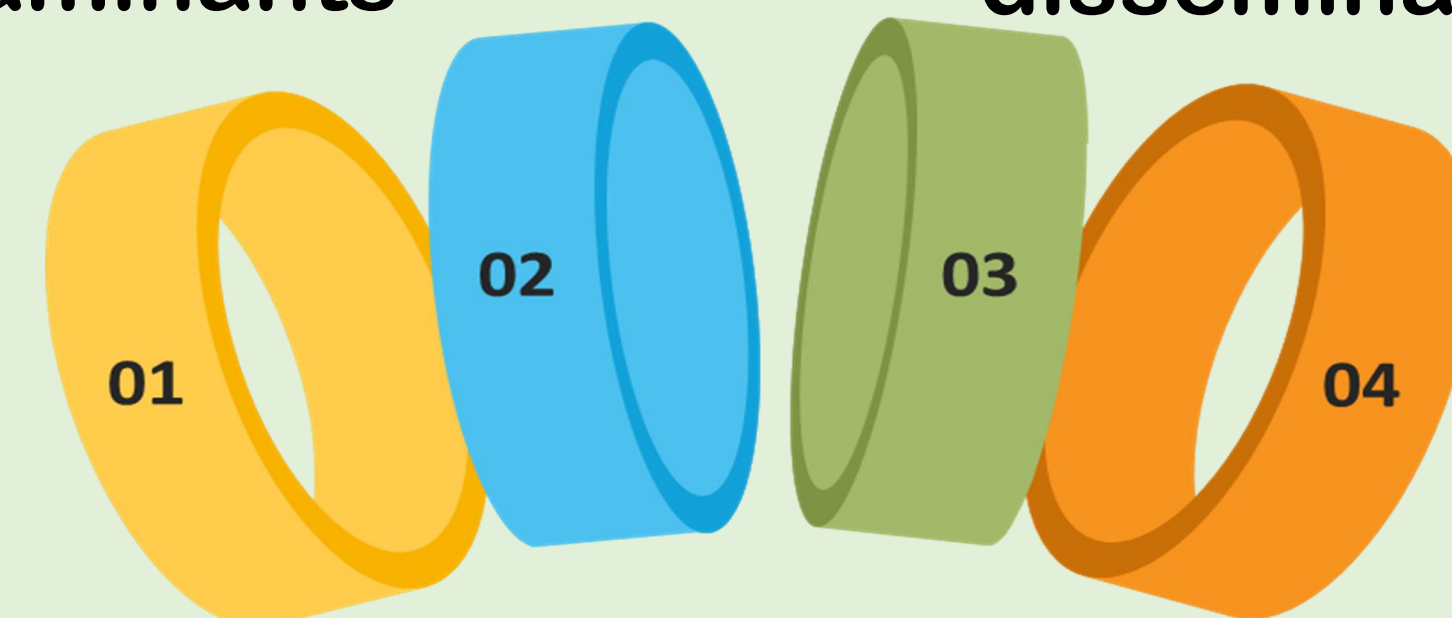
### THE PROJECT SCOPE, OBJECTIVES AND CONCEPT

PureNano proposes a novel method for an in-situ purification/regeneration process of plating baths from contaminants and undesirable chemical species hindering the operation of the bath.



**OBJECTIVE 1:** Develop and functionalize magnetic nanoparticles to capture specific contaminants

**OBJECTIVE 3:** Nanosafety, LCA &LCC analysis, innovation, exploitation and dissemination activities



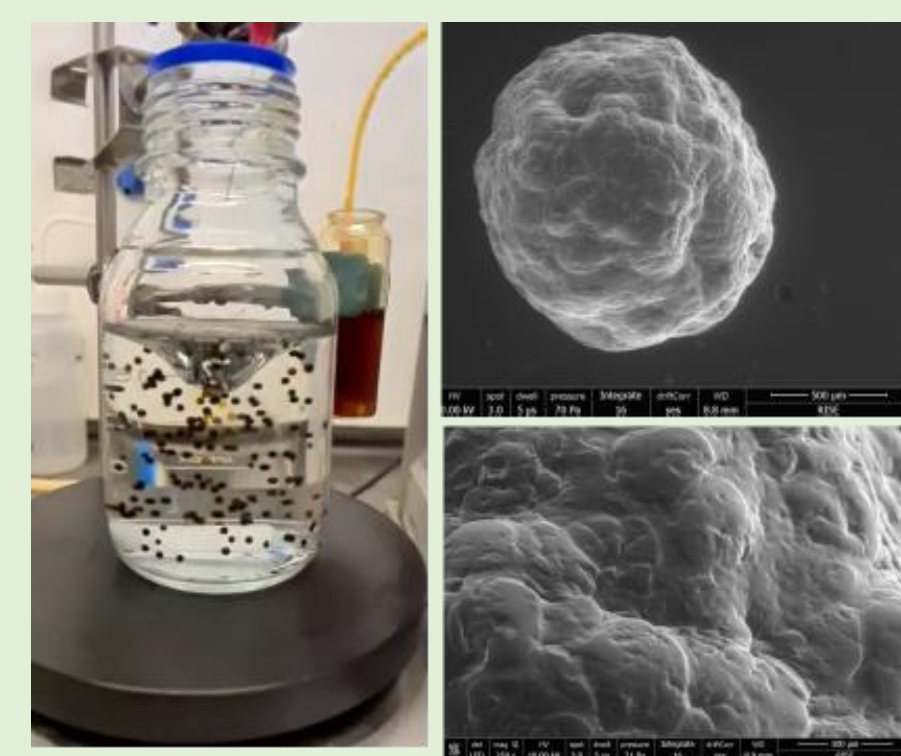
**OBJECTIVE 2:** Integration of purification system using functionalised MNPs and safe disposal of MNPs

**OBJECTIVE 4:** Validation and demonstration activities of purification process at pilot scale

The concept is based on a real industrial need and will be implemented through the utilization of appropriate functionalized magnetic nanoparticles (MNPs), leading to a significant extension of the lifetime of the baths, up to 10 times. Technology will be tested in two pilot lines at Gaser (Italy) and Cnano (Greece).

### PRELIMINARY RESULTS

- Aggregates of functionalized MNPs with a specific surface functional groups has been produced (picture right)
- Preliminary studies have been conducted to validate the three different recycling routes of used MNPs.
- The design of the purification and separation plant has been completed.
- The preliminary Health & Safety hazard analysis and Life Cycle Analysis for the production and functionalization of MNPs have been completed



Functionalized MNP aggregates (beads)



Gaser Pilot Lines

### CONSORTIUM



### CONCLUSION

In the first 18 months of PureNano project following results have been obtained:

- Production of functionalized MNP aggregates.
- Preliminary validation of the three different recycling routes for the used MNPs.
- Designing of the purification and separation plant.
- Preliminary Health & Safety hazard analysis and Life Cycle Analysis.

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### CONTACTS

Presenter: Anwar Ahniyaz, [anwar.ahniyaz@ri.se](mailto:anwar.ahniyaz@ri.se)  
Coordinator: Luca Magagnin, [luca.magagnin@polimi.it](mailto:luca.magagnin@polimi.it),  
[info@purenano-h2020.eu](mailto:info@purenano-h2020.eu)