



Modulation of metallic oxide particle behaviour in a formulation: physicochemical and/or sensory properties of emulsions as a tool to identify particles interactions within the matrix

Daria Terescenco, Géraldine Savary, Nicolas Hucher, Celine Picard

► To cite this version:

Daria Terescenco, Géraldine Savary, Nicolas Hucher, Celine Picard. Modulation of metallic oxide particle behaviour in a formulation: physicochemical and/or sensory properties of emulsions as a tool to identify particles interactions within the matrix. 32nd Conference of The European Colloid and Interface Society (ECIS2018), Sep 2018, Ljubljana, Slovenia. hal-02468429

HAL Id: hal-02468429

<https://normandie-univ.hal.science/hal-02468429>

Submitted on 8 May 2020

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

Modulation of metal oxide particle behavior in a formulation: physicochemical and sensory properties of emulsion as a tool to identify particles interaction within the matrix

Terescenco Daria^a, Savary Géraldine^a, Hucher Nicolas^a, Picard Céline^a

[a] Normandie Univ, UNILEHAVRE, FR 3038 CNRS, URCOM, 76600 Le Havre, France

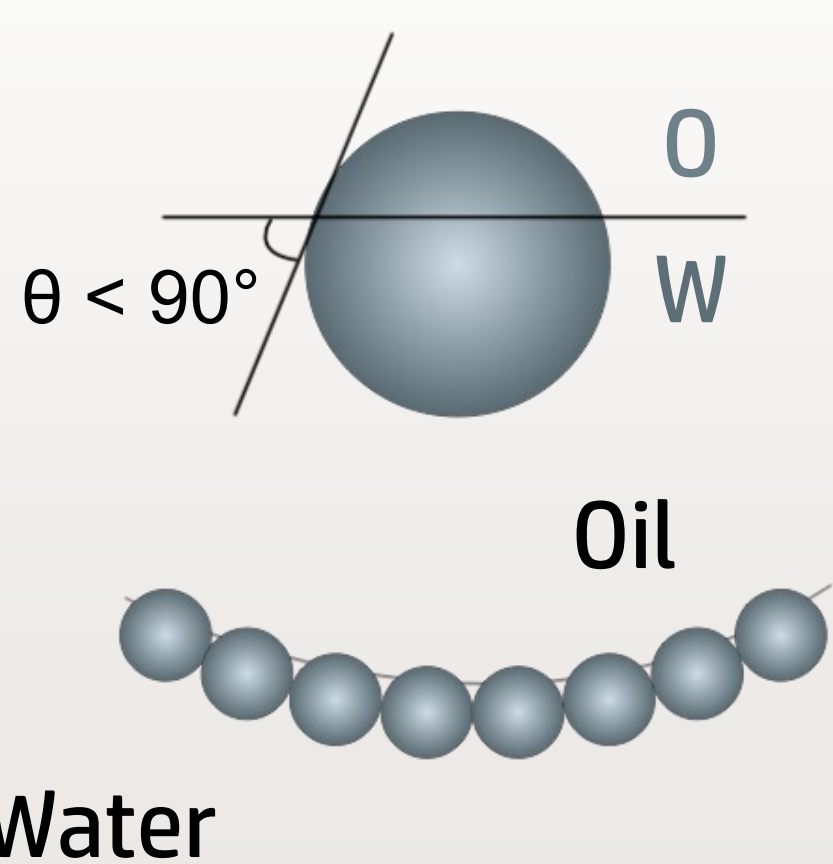
The aim of this study lays on the fundamental approach in the understanding of the behavior of the systems containing solid particles

Two metallic oxides were selected depending on their different physicochemical properties and introduced in a formulation. Then, *stable, homogeneous and totally emulsified* systems, never discussed in the literature before, were described through a fundamental, multiscale characterization. Rheological, thermal and sensory behavior, as well as emulsion colloid size and size distribution, were used as a tool to identify the role of the particles on the matrix organization.

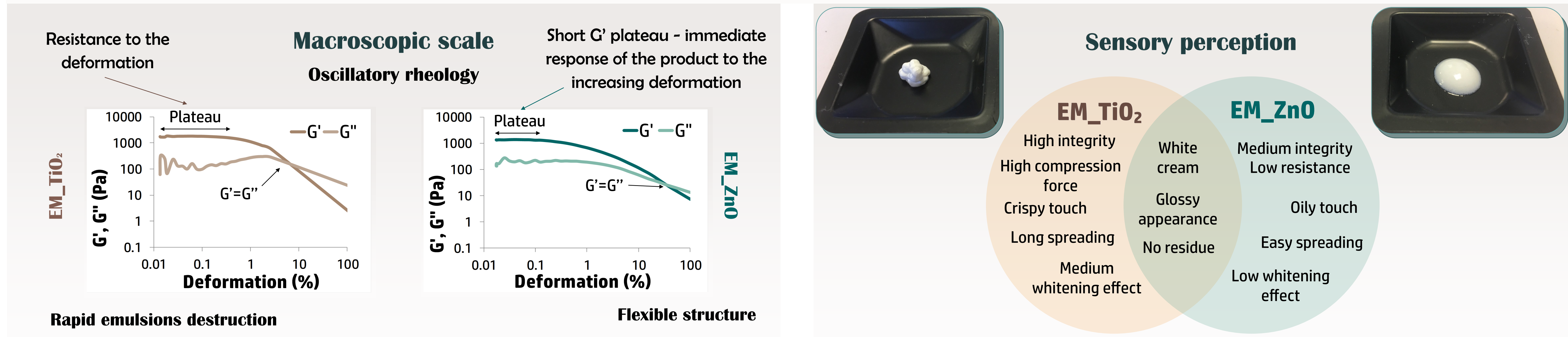
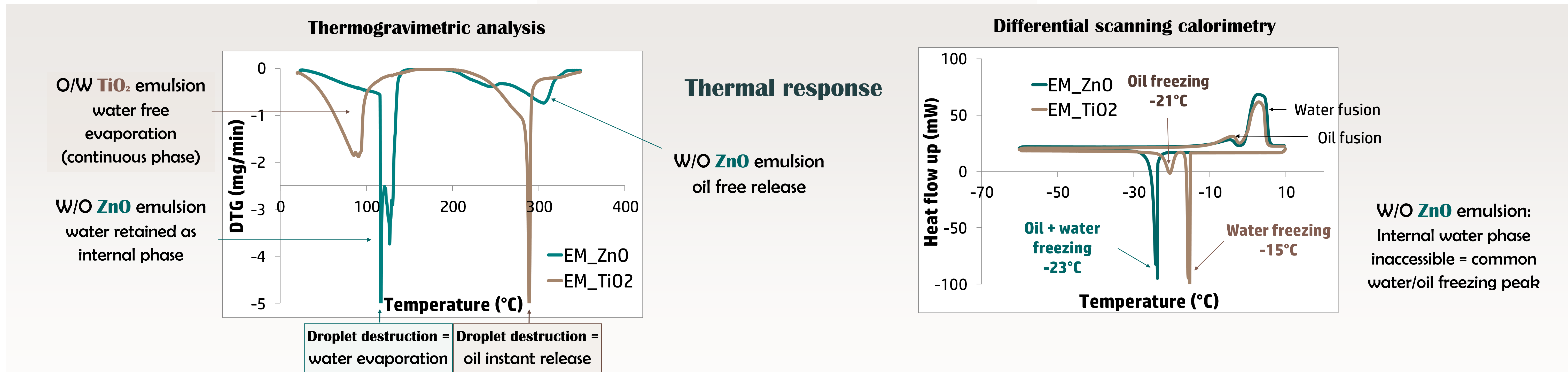
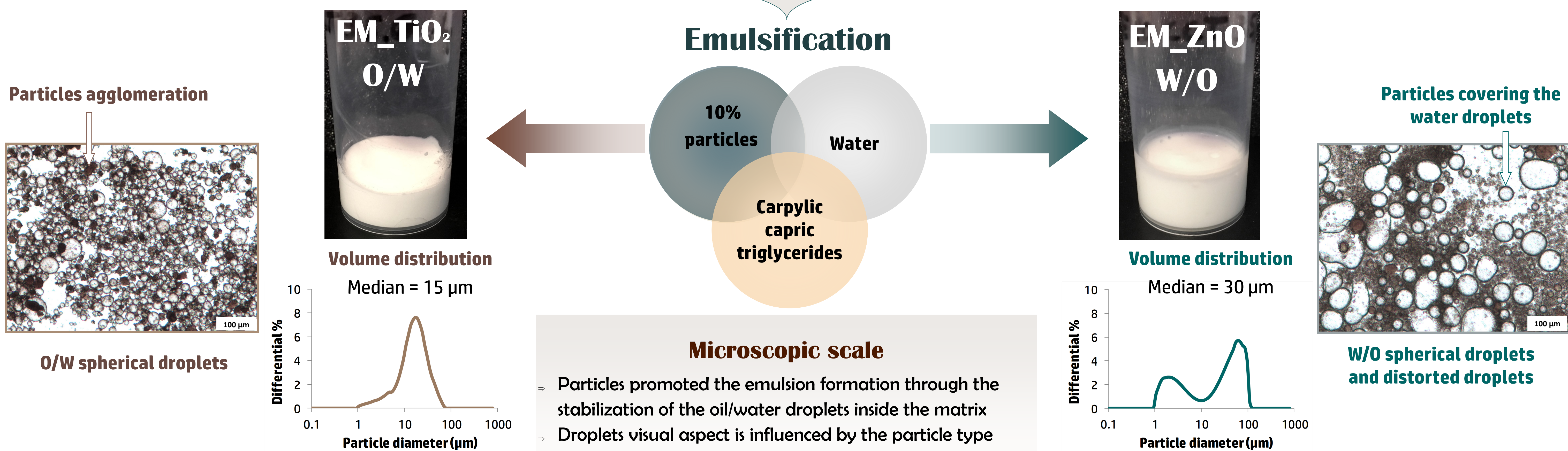
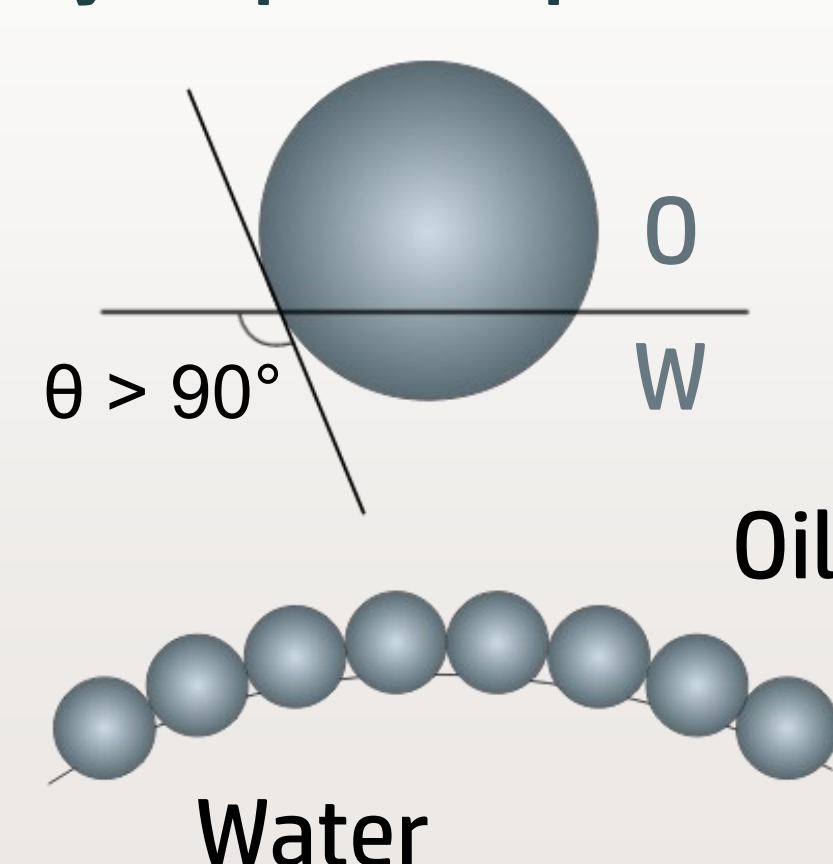
Titanium Dioxide, Silica, Cetyl Phosphate

Zinc Oxide, Jojoba Esters

Hydrophilic particle¹



Hydrophobic particle¹



Conclusion

This study showed that emulsions stabilized with solid particles :

- Can be of oil on water or water in oil type, depending on the particle properties (hydrophilic or lipophilic);
- Possess specific thermal behavior, due to the particle strong adhesion on the droplet surface;
- Show individual macroscopic response and sensory perception, governed not only by the emulsion type, but also by the particles individual properties.

The chosen particle type clearly impacted the properties of the system at microscopic and macroscopic level. This impact should be taken into account when discussing classical emulsions containing particles in their composition. The next step of this work will be to complete the studied range of particles with other metal oxides to achieve the fundamental understanding of the particles role in the matrix.

¹ Binks, B. P. Particles as surfactants—similarities and differences. *Current Opinion in Colloid & Interface Science* 7, 21–41 (2002).