MultiPhaseFlow

Publieke samenvatting / Public summary

Aanleiding

This Industrial Partnership Programme aims at understanding the rheology of complex emulsions and their stability under flow. While there is much empirical knowledge about emulsion rheology and stability, the microscopic physical mechanisms that govern emulsion behaviour are still poorly understood, in particular for emulsions with a complexity that goes beyond the standard oil/water/surfactant systems. This lack of understanding greatly hampers the rational design of emulsion-based products and processes.

Korte omschrijving

Here, we aim to increase this understanding by addressing the following questions: (i) How do the rheological properties and stability of emulsions depend on the interactions between the droplets, on the nature of the interfaces, and on the nature of the two liquid phases? (ii) How do these complex emulsions behave in confined flows, for example in porous media? (iii) How do different flow conditions affect the stability of the emulsions?

Resultaat

To address these questions, we bring together a team of academic and industrial research groups with different, complementary expertise. By combining macroscopic rheology with novel microfluidic tools and imaging techniques, we will establish the relation between the macroscopic flow behaviour and stability of emulsions and the microscopic structure and interactions, and thereby increase our understanding of flowing emulsions beyond the current empirical models.

Projectinformatie / Project information

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TKITOEWP-30-01
Subsidiebedrag / Grant amount
€ 550.000,00

Algemene informatie / General information

Penvoerder / Secretariat
ISPT

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