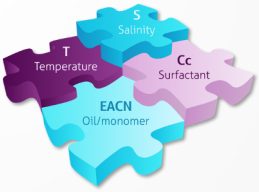
VLCI Workshop:

Predictive Formulation Science HLD-NAC & Its Applications

Hosted by VLCI Experts - Amsterdam Science Park

The predictive formulation science **Hydrophilic Lipophilic Difference - Net Average Curvature** (HLD-NAC) is a very powerful tool for finding **matching ingredients for emulsions**, resulting in **improved stability** and **efficacy** of end-products. The model is applied to characterize various types of oils and surfactants and develop different emulsions (**o/w**, **w/o**, **micro-emulsion**) with certain conditions. Although it has been applied for many years, there is still a limited use of it in emulsion developments and ingredients thereof. The equation of the science requires the input of (practical) parameters from the ingredients (oils, surfactants, co-solvents, preservatives, fragrances, etc.) which, once generated, **can predict (in)compatible ingredients** to develop and optimize specific emulsions. The ingredient's data generated from the model is **predictive** and **sustainable**: you can use them over and over, allowing to **move away from trial-and-error** and to use **digitalization** effectively for product developments. This is a very efficient way to enhance the properties of an emulsion and to **reduce complexity**, **time** and **cost** of its development. When combined with High Throughput (HT) screening for automated, parallel and small-scale preparation of samples and end-products, further efficiency can be achieved. HLD-NAC find its use in a **wide variety of applications**; coatings, personal care, household, polymers, agrochemicals, EOR, pharmaceuticals, etc.

Hydrophilic Lipophilic Difference Net Average Curvature (HLD-NAC)



Allows **profound predictions** to be made about the **type of emulsion** (o/w, w/o, micro-emulsion) and the **suitability and efficiency of a surfactant** for defined formulations. The HLD-NAC approach is **widely applicable** to various types of oils and both anionic and non-ionic surfactants, as well as other conditions of the emulsion.

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What you will learn in this workshop

- An introduction to the predictive science HLD-NAC and the ingredient parameters it requires, via presentations and case studies of their use in efficient product development.
- How to determine the required ingredient parameters via practical sample preparation, rating of samples and the use of software/ apps.
- Implementation of the parameters to find matching ingredients, to make incompatible ingredients become compatible and to develop formulations based upon predictions.
- For which applications HLD-NAC can be used and how the strategies aid effective implementation.
- Interact with experts and obtain as much knowledge as possible to get started with the implementation of the predictive formulation science HLD-NAC in your own labs.

Level required to attend this workshop

- A basic understanding of ingredients and formulation; you know the function of several different ingredients, and how to use them to develop formulations.
- A brief look at the predictive formulation science HLD-NAC:
  https://www.stevenabbott.co.uk/practical-surfactants/
- And also articles showcasing many different applications on our website:
  https://vlci.biz/our-work/

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- **Duration**: 1 day (normal level)
- **Cost**: €500/participant
- **Maximum number of participants**: 16

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