



## Webinar Workshop: Predictive Formulation Science HLD-NAC and its applications

*Sander van Loon; VLCI, Amsterdam, Netherlands ([www.vlci.biz](http://www.vlci.biz))*

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. This predictive formulation science HLD-NAC find its use in a wide variety of applications; coatings, personal care, household, polymers, agrochemicals, EOR, pharmaceuticals, etc.

### What you will learn in this workshop:

- An introduction to the predictive science HLD-NAC and the ingredient parameters that it requires, via presentations and case studies of their use in efficient product development.
- How to determine the required ingredient parameters; 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 sciences HLD-NAC, see also; <https://www.stevenabbott.co.uk/practical-surfactants/>  
And articles showcasing many different applications on our website: <https://vlci.biz/our-work/>

The cost for this webinar workshop is; 300 euro/person. The workshop for HLD-NAC takes 3,5-4 hours.

## Program, led by VLCI experts online

**14:00** – Arrival, Tech set up/check and introduction of participants

**14:15** – Introduction presentation, Sander van Loon, VLCI

HLD-NAC – The parameters; how to obtain & implement, Sander van Loon, VLCI

**14:45** – How to determine HLD parameters? Gwenola Le Mouee/Nacho Martinez, VLCI

**15:15** – Experimental HLD – evaluations of HLD scans, Alice Lorgue, VLCI

**15:45** – Coffee break

**15:55** – Experimental HLD - implementation of HLD parameters, Alice Lorgue, VLCI

**16:15** – Phase Diagrams, Gwenola le Mouee, VLCI

**16:30** – Science Based Formulation and web-apps, Sander van Loon, VLCI

**16:45** – Live challenge: your [non-confidential] problems – receive your HLD-NAC strategy to problem solving, all

**17:15-17:30** – Closure, Sander van Loon, VLCI