



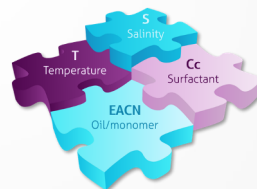
# On-Site Workshop: Predictive Formulation Science HLD-NAC & Its Applications

*Led by VLci Experts*



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.





## 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/>



## On-Site Workshop: Predictive Formulation Science HLD-NAC & Its Applications

- ◆ Duration: 1 day
- ◆ Cost: €3.500/day, excluding travel expenses, sample and shipment costs (for maximum 10 attendees)



Visit our website [www.vlci.biz](http://www.vlci.biz)



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