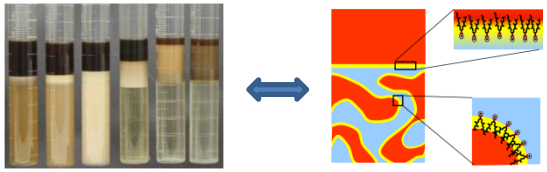
Culgi

CULGI provides advanced chemical software tools and scientific consultancy to world leading companies from diverse industries such as chemicals, electronics, petroleum, personal care and pharmaceuticals.

Our general purpose multi-scale modeling and thermodynamics platform helps in finding rapid and validated solutions to challenging industrial problems, providing new insights and accelerating product design.

Petroleum

The time and cost of for process optimization in exploration & production in the gas- and oil industry through lab experiments is demanding, certainly when one reservoir conditions need to be taken into account. CULGI combines experimental data with the theory of interfaces to develop chemical engineering-based software tools for enhanced oil recovery, heavy oil component analysis and dry/wet interfaces.

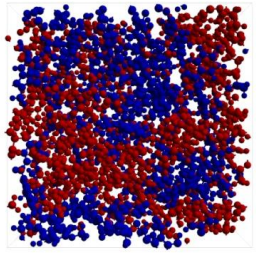


Lab Experiments **Theory**

CULGI uses software techniques from big data and database management with its in-house developed mapping and simulation algorithms in order for researchers in the petroleum industry to reach their goals.

Sources: Shell Collaboration.

Drugs



Drug/Excipient Mixture

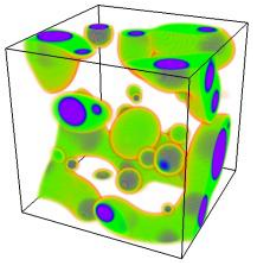
With the current trend in drug delivery that small-molecule drugs become increasingly more hydrophobic in nature it is of direct interest to quantify the interaction with excipients and the resulting phase behavior. In these mixing studies CULGI uses a combination of atom-based modeling and engineering thermodynamic approaches.

Sources: Eli Lilly Collaboration.

CULGI has embarked on an ambitious multiyear project to provide ligand/protein binding affinity studies by computational means only. The final product is aimed to be used as a screening tool for R&D professionals in the healthcare industry.

Protein Binding Affinity

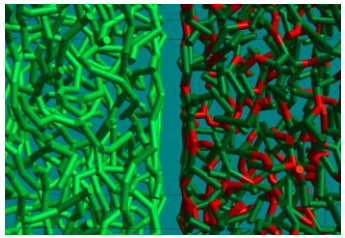
Materials



Polymer Blend Simulation

The research and development of new materials with increased performance and improved functionality is the major driver for product innovation across the world. CULGI modeling implies the use of molecular engineering thermodynamics, that can generate molecular organization fast en reliably, on a time and length scale that is on par with experiment. CULGI has worked on a wide range of industrially relevant topics including adhesives, biopolymers, polymer blends, silica hydrogels and membranes.

The overarching objective here is to drive product innovation as showcased by several patent applications.

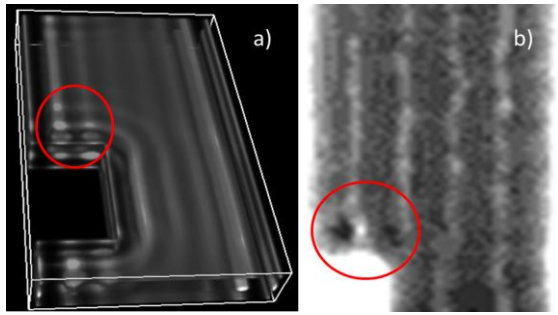


Polymer Interfacial Simulation

Sources: 3M / SABIC collaboration.

Electronics

The computer industry is looking at alternative methods to tackle the every decreasing chip dimensions. Directed self assembly through block copolymer is currently tested by industry as a viable addition to photolithography which is still the method of choice for chip making.



Simulation (a) and experimental study (b) of the onset of defects through nucleation in directed self assembly .

Sources: ASML collaboration .

Resellers

Don Computing (Oceania)

Ryoka Systems Inc. (Japan)

Swastik Innovistaz (India)