

Disperse Systems and Interfaces

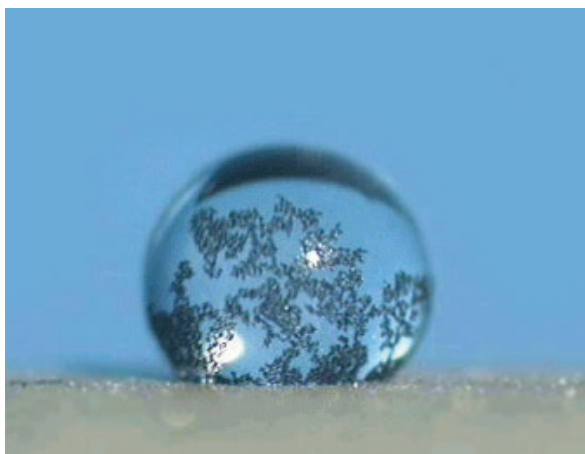


Problem-solving and development are our objectives



Future technologies and interfaces

A large number of technical processes and products are characterized by interfaces. Microscopic and molecular interfacial phenomena determine macroscopic functionality. The same applies to future technologies such as nanotechnology, formulation technology and microstructures in process engineering. For this reason, a major research and development focus in the chemical and pharmaceutical industry is to be found in interfacial chemistry and physics.



Self-cleaning effect

The targeted control of elementary interfacial processes such as adsorption, adhesion and wetting are in the forefront of this work, in which we concentrate on developing and optimizing:

- systems (e.g. functional surfaces, adhesion);
- methods (e.g. microfluidics for diagnostics);
- basic operations (e.g. filtration, distillation).

Our service ...

We have consolidated our expertise and innovative potential for the development and optimization of complex systems and processes, which are characterized by a large number of interfacial phenomena. An interdisciplinary team of chemists, physicists and engineers

develops integrated concepts and solutions for your problems utilizing the extensive range of modern methods available at Bayer Technology Services, e.g. in the fields of surface and interfacial physics, disperse systems and material characterization. If necessary, we can also develop new physicochemical methods or call on one of our established contacts with research institutes and universities worldwide.

Our main services are:

- consultancy, evaluation and support in the problem analysis of interfacial systems and processes;
- determination of structure-property correlations;
- development of systems and processes with customized surfaces and/or interfaces;
- assistance with operating problems, fault analysis and troubleshooting.

... is your gain.

Given the wide range of systems and products available within the Bayer Group, we have established extensive expertise in the field of interfacial systems and processes. For our customers this means:

- a holistic and interdisciplinary approach to problem-solving;
- utilization of specialist expertise in all fields and state-of-the-art equipment;
- scientifically based foundations for decision-making in product and process development;
- specific application of innovative and established technologies in problem-solving.



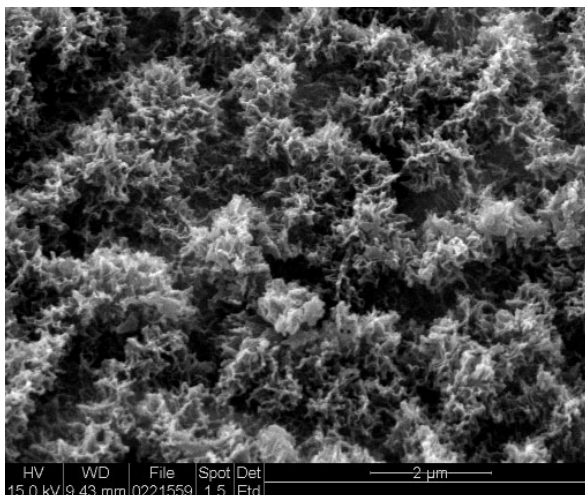
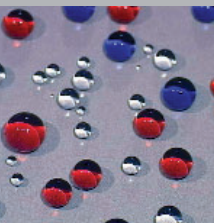
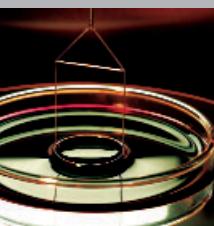
Our approach

We have at our disposal state-of-the-art apparatus for characterizing interfaces in terms of their structural properties, thermodynamic parameters and kinetic aspects.

In the investigation and characterization of the liquid and solid phases involved in the systems, surface-active substances in particular play an important role in what are often complex multicomponent disperse systems.

Detailed method lists are given in the following product description sheets: "Surface and Interface Analysis/Microscopy"; "Disperse Systems/Formulations/Colloidal Chemistry"; "Particle Characterization"; and "Material Characterization".

On account of our expertise we are also able to develop and establish new customized methods in a very short space of time.



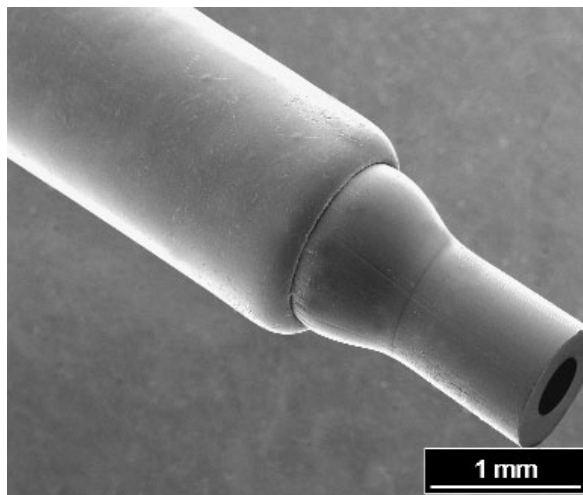
Microstructured ultrahydrophobic surface

References

As a service provider within an innovative chemical and health care group, we work on a wide variety of problems in many different fields. The Bayer subgroups (Polymers, Chemicals, HealthCare and CropScience) are the main customers for our services.

Below are some of the projects we have worked on:

- formulating abrasive slurries for slicing solar silicon wafers with wire saws;
- development of ultrahydrophobic and self-cleaning surfaces;
- optimizing multiphase flow in capillaries for clinical diagnostics;
- development of a method to characterize the geometry and wetting of capillary and microfluidic systems, e.g. for point-of-care detection;
- improving surface sizing and printability of paper;
- optimization of process technology for e.g. separation of solids and crystallization;
- development of coalescing fibers for extraction (removal of ultrafine droplets).



Needle for microdispensing liquids

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