

## Chemical Potential in Focus – Flow of Substances and its Consequences

R. Rüffler\*, G. Job

*Job-Foundation, University of Hamburg, Institute of Physical Chemistry,  
Grindelallee 117, 20146 Hamburg, Germany*

\*Author for correspondence e-mail; [regina.rueffler@job-stiftung.de](mailto:regina.rueffler@job-stiftung.de)

The simplest way to introduce the chemical potential  $\mu$  is to characterize it by a set of typical and easily observable properties, i.e. by designing a kind of “wanted poster” for  $\mu$ . This phenomenological description may be supported by a direct measuring procedure, a method normally used for the quantification of basic concepts such as length, time or mass. The proposed approach is elementary, does not require any special previous knowledge, and leads immediately to results that can be utilised practically.

After a short introduction into the topic, the focus of the presentation will be on describing the flow of substances and its consequences such as osmosis, vapour-pressure lowering and freezing-point depression, by means of the chemical potential  $\mu$  [1]. These types of transformations are found everywhere, in households and the environment as well as in nature and in engineering. For example, it is known from everyday life that juice is drawn out of sugared strawberries or that cherries swell up and burst after a long rain. Additionally, illustrative but nevertheless easily and safely realisable experiments can be carried out such as demonstrating osmotic pressure by constructing an „osmometer“ by use of a carrot. This improves the understanding of such processes and forges links between textbook knowledge and everyday experiences. Selected experiments will be shown live during the oral presentation.

### References

- [1] G. Job, R. Rüffler, Physical Chemistry – an Introduction with New Concept and Numerous Experiments, Vieweg+Teubner, Wiesbaden, 2010 (in preparation).