

Preface

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Gerhard Findeneegg: A Scientific Life in Soft Matter at Interfaces

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In April 2014 Gerhard Findeneegg was honored with a colloquium on occasion of his 75th birthday. This colloquium was organized by the international graduate school IRTG 1524 “Self-Assembled Soft Matter Nano-Structures at Interfaces”, that is financed by the German Research Council (DFG). Arising from this event many participants of the workshop and members of the IRTG agreed to contribute to a special issue of *Zeitschrift für Physikalische Chemie* dedicated to Gerhard Findeneegg. The variety of topics addressed in this issue stands for the broadness of science Gerhard Findeneegg has been working on since more than fifty years, now.

Gerhard Findeneegg studied chemistry at the *University of Vienna* where he obtained his PhD in physical chemistry with Friedrich Kohler in 1965. The thesis

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work was on calorimetric studies of binary liquid systems of non-electrolytes. His papers from this time were seminal in the field and are still frequently cited [1, 2]. His post-doc time, Gerhard spent at *University of Bristol* in the group of Douglas H. Everett, where he started his research on adsorption of chain-like molecules at solid surfaces [3, 4]. The contact with Everett was kept over the years and led to the German translation of Everett's book *Basic Principles of Colloid Science* by Irmgard and Gerhard Findenegg in 1992 [5]. After his post-doc, Gerhard returned to Vienna in 1969 where he developed structural concepts of liquids close to graphite surfaces [6, 7]. After his habilitation in 1973 he got his first professorship at the *Ruhr-Universität Bochum* and there, he was extending his deep investigations of surfaces and adsorption phenomena. From 1991 to 2005 Gerhard Findenegg was full professor at the *Technische Universität Berlin*. The variety of studied systems became broader and more complex. Surface induced phase transitions of both long-chain alkanes [8] and lyotropic systems [9] were investigated. Gerhard started working on aqueous systems containing amphiphiles [10], where he provided deep insights into the formation of surface aggregates. He also studied the structure of fluid interfaces [11, 12] as they are important in the process of emulsification. Thereby, beside calorimetry, phase modulated ellipsometry [13], x-ray [9], neutron reflectometry [14], light scattering and neutron small angle scattering (SANS) [15] became more and more important for Gerhard's research. One of his most cited papers is on a neutron reflectometry study of water in contact with hydrophobic surfaces, where the authors present a very elegant non-invasive method to probe the reduced water density (due to nanobubbles?) in front of a polystyrene surface [14].

Mid/end of 1990s Gerhard Findenegg started a new topic: He increased the degree of confinement and focused his studies more towards phase transitions within pores of MCM 41, SBA15 and CPG. His mostly cited paper is on melting and freezing of water in ordered mesoporous silica materials [16]. In-situ small angle x-ray scattering shed light on the different steps of pore condensation and the film formation at the pore walls [17]. Studying the effect of curvature on the structure of surfactant films led also to the inversion of the systems from nanopores to nanoparticles. The curvature and the interaction between the surfactant and the wall/particle material decide about the formation of a surfactant film or of the shape of micelles [18]. However even after his official retirement Gerhard Findenegg remained scientifically very active. Recently he started studying the interactions between proteins and nanoparticles which present a model system for many biologically relevant questions [19].

Gerhard Findenegg was the nucleus at least for two research networks beyond the Berlin area. From 1998 to 2006 he was the spokesperson of the CRG 448 "Mesoscopically structured composite systems". At the beginning of the new century

he created the idea together with his friend Keith Gubbins from North Carolina State University (NCSSU) in Raleigh to establish an international graduate school between universities in North Carolina and universities and research institutes in the Berlin/Brandenburg area.

Gerhard Findenegg is not only an excellent scientist, but he is also a brilliant teacher, who gives very clear and concise lectures. At least for German speaking students, he wrote the most important book on statistical thermodynamics [20] that helped many students to pass the exam. Recently, i.e. 30 years later, a new edition of that classical textbook together with Thomas Hellweg was published.

Gerhard is still a very active and enthusiastic scientist, and we appreciate very much the daily profound scientific discussions with him.

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