

## 第 102回化学コロキウム

日時：平成19年7月30日(月) 15:00~17:00

場所：国際交流会館 中会議室

演者：Jan K. G. Dhont 教授 (Forschungszentrum Juelich)

演題：Thermodiffusion of colloids

Abstract: Thermal diffusive properties of colloidal particles depend on (i) interactions between the colloids and (ii) on single-particle properties (connected to, for example, their solvation layer and double layer). I will first discuss a thermodynamic approach to thermodiffusion of interacting colloids. In such a thermodynamic approach, hydrodynamic interactions between the colloids can not be taken into account. Such interactions can only be accounted for through a microscopic approach. A Smoluchowski equation will be proposed which is valid for systems in a temperature gradient, that allows to account for hydrodynamic interactions. This equation of motion will be solved to first order in colloid concentration, leading to quantitative predictions for the leading order virial coefficients in a density expansion of the thermal diffusion coefficient, including both direct and hydrodynamic interactions. In addition, the double-layer contribution to the single-particle thermodiffusion coefficient will be discussed. An explicit calculation is performed to within the Debye-Hueckel approximation. Both the interaction contributions and single-particle contributions to the thermal diffusion coefficient will be compared to experiments.

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