

# Computer Modeling of Binary Dipolar Monolayers

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## Abstract

Binary colloidal dispersions are obtained when two types of particles with different material properties, mass, size, charge, number, ... are suspended in a viscous liquid. Such colloids have recently been found to show interesting aggregation phenomena with novel structural and kinetic properties. Binary colloids are involved in a large variety of natural phenomena and have potential industrial applications from waste water treatment through mineral flotation to cell recovery.

We investigated the structural and dynamic properties of so-called binary dipolar monolayers (BDM). BDMs are planar colloidal systems containing two sorts of particles which have a permanent or induced dipole moment. The direction of the dipole moment of the particles is fixed to be perpendicular to the plane of motion and has opposite orientation for the two components.

The goal of our work was to carry out a thorough investigation by computer simulation in order to understand self-assembly processes in binary dipolar monolayers, to identify the most important parameters of the system governing the pattern selection, to explore all possible structures and to study the statistical physics of this special two-dimensional system.

*Keywords:* computer simulation, dipolar particles, structure formation

## References

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