

## Iron nanoladies, new nanoparticles for imaging and targeting.

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### Introduction

Complex coacervate core micelles (C3Ms) have attracted increasing attention in the field of nanotechnology over the recent decade. This class of micelles is formed from mixing aqueous solutions of a polyion-neutral diblock copolymer and an oppositely charged polyelectrolyte[1]. The micellar core consists of an electrostatic complex which is stabilized by a corona of electroneutral segments of the diblock polymer. Recently, our research group demonstrated the formation of a new kind of C3Ms, which introducing the different metal ions into the core of the micell by replacing the homoelectrolytes with coordination polymer consisting of metal ions[2]. The formation of these entirely new particles is very interesting from not only the fundamental point of view, but also the applied standpoints due to the various properties from the different metal ions in the core.

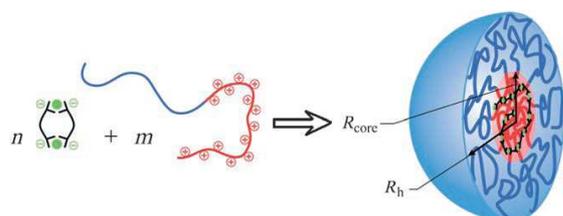
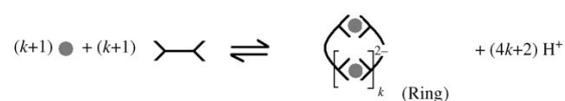
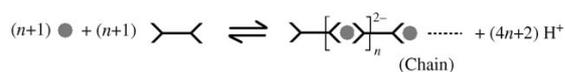


Figure1 Illustration of formation of coordination polymer and complex coacervate core micelles. (Zink system)

### Methods and aims

Colloidal iron oxide nanoparticles have been the most extensively investigated magnetic nanoparticles for MRI and biomedical applications due to their unique magnetic properties and the ability to function at the cellular and molecular level of biological interactions[3-4]. In the present research project, the novel nanoparticles from bisligand-iron coordination polymers and charged-neutral diblock polymers will be studied in detail. We expect that we can induce the super-paramagnetic properties in the micellar core of our iron nanoladies. We will focus on the stability and the application as a contrast agent for MRI and magnetic targeting in plant, veterinary and medical science. Of course, in order to gain a better understanding of the cooperativity that leads to the enhanced self-assembly of these particles, we will complement our experiments with some theoretical modeling.

### References

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