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# **Engineered Nanomaterials Growth Control by Monomers and Micelles: From Surfactants to Surface Active Polymers**

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## **Abstract**

In pseudo-micellar phase, the crystal growth is primarily achieved by the surface activity of the monomers in the presence of micelles. To ensure the maximum potential of surface activity of monomers in morphology control, a micellar phase is required. This account specifically focuses on the crystal growth control by the surface active monomers of conventional surfactants and that of water soluble polymers. It also distinguishes the mechanisms involved in the shape control driven by the micellar phase of micelle forming polymers, their role as nanoreactors, micellar stability, and micellar transitions from the monomeric phase. The fundamental basis of the crystal growth control by the surface active agents holds the key of using other non-convectational surface active species like proteins, carbohydrates, and bioactive polymers to achieve morphology control bionanomaterials for their specific biological applications.

**Keywords:** crystal growth control, surface active molecules, micelles, water soluble polymers, micellar environment for morphology control.

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