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Type: Poster Presentation

Simulating Iron Oxide Nanoparticle Oscillations in different Electric Fields.

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Abstract content ** ** (Max 300 words) **
** **Formatting &** **
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The surface charge on small iron oxide nanoparticles may be tuned during synthesis as a function of size (and shape) by precisely controlling the quantity (concentration) and the type of surfactant chosen to act as the capping agent. As such, these nanoparticles may possess a small amount of uncapped charge. Similarly, the positive charge on bare nanoparticles may be carefully engineered to suit a particular application. These nanoparticles with a small amount of uncapped charge behave like imperfect point charges and even dipoles in the presence of an external electric field. In this theoretical study it will be shown how these properties may be exploited to develop chemical and biological sensors. In particular hydroxyl and hydrocarbon detection are presented as case studies.

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