

Adsorption behaviors of amphiphilic gold nanoparticles with different surface properties at water-oil interface.

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Amphiphilic gold nanoparticles (AuNPs) functionalized with hydrophobic and hydrophilic ligands were synthesized and the molar ratios of ligands on their surfaces were obtained from electrostatic titrations. The hexane microscale droplets covered with amphiphilic AuNPs were formed by the interfacial assembly of the amphiphilic AuNPs at the hexane-water via arrangement of the ligands on the AuNP. Depending on the ligands ratio, experimental results showed different adsorption behaviors of amphiphilic AuNPs at the interface. Several isotherm models such as Langmuir model, BET model, Freundlich model, Redlich-Peterson model were used to investigate the adsorption behaviors at the interface. From the models, the maximum uptake and equilibrium constant of AuNPs at the hexane-water interface were obtained.