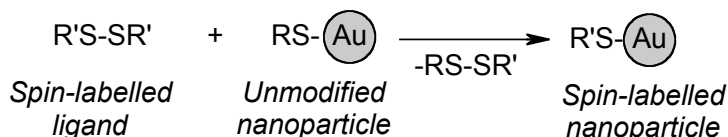


Interactions between adjacent ligands in spin labelled Au nanoparticles

Victor Chechik

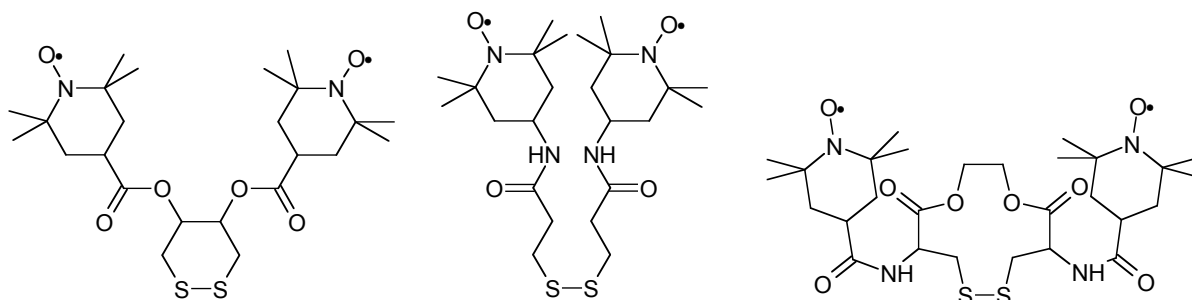
Department of Chemistry, University of York, Heslington, York YO10 5DD

We have recently developed a method for preparing spin-labelled Au nanoparticles using a ligand exchange reaction.^{1,2}



We found that EPR studies of these nanoparticles can provide important information about the mechanism of exchange reaction and the nanoparticle structure.^{3,4} In this presentation, the interactions between adjacent spin-labelled ligand adsorbed on the same nanoparticle will be analysed in order to get insight into the organisation of the organic ligands on the nanoparticle surface.

Multiple spin labels can be introduced in the nanoparticles either by ligand exchange reaction with diradical (or polyradical) ligands, or by exchanging several monoradical ligands on the same nanoparticle. The structures of some ligands used in this work are shown below.



Analysis of distances between the radicals adsorbed on the same nanoparticles can provide interesting information about the conformation of immobilised spin probes, and their distribution on the nanoparticle surface. The distances were calculated from the strength of dipole-dipole interactions between the radicals as observed by CW EPR measurements or pulsed EPR (in collaboration with Dr G. Jeschke, MPI-P, Mainz) of the frozen nanoparticle solutions.

Statistical analysis of the distribution of spin labels on the nanoparticle surface and comparison with EPR-calculated distances made it possible to reach some conclusions about the conformation of the ligands adsorbed on the nanoparticle.

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