

Alignment of Size-Controlled Magnetic Microrods

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Alignment of magnetic microrods was achieved by applying external magnetic field. Microrods containing magnetic nanoparticles were prepared from the mixture of a novel self-assembling molecule and hydrophobic nanoparticles in an organic solvent. The mixture solution was left to dry to induce evaporation-induced self-assembly (EISA) resulting in formation of straight magnetic microrods. The sizes and shapes of the microrods were tunable by controlling evaporation temperature in the range of -15°C to 80°C . After microrod formation, the magnetic microrods were successfully aligned by applying external magnetic field. Alignment and characteristics of the magnetic microrods were investigated using optical microscopy, NMR spectroscopy, SEM, and TEM. The size-controlled microrod containing nanoparticle is expected to be applicable in diverse engineering fabrications such as magnetic polymer thin film and nanorod-based optical devices.