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Synthesis and structural characterization of gold nanorods

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Abstract

Gold cylinders with nanometric dimensions were successfully synthesized and characterized by X-ray scattering and diffraction, transmission electron microscopy, dynamic light scattering, and ultraviolet–visible spectroscopy. A small change on the synthesis route led to a slower reaction, allowing better control over the dimensions of the nanorods. The structural characterization enabled the description of the parameters as a function of synthesis time as well as reliable quantification of molar concentrations. The fine-tuning of sizes is crucial for the optimization of the nanorods on specialized applications.

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Fig. 1

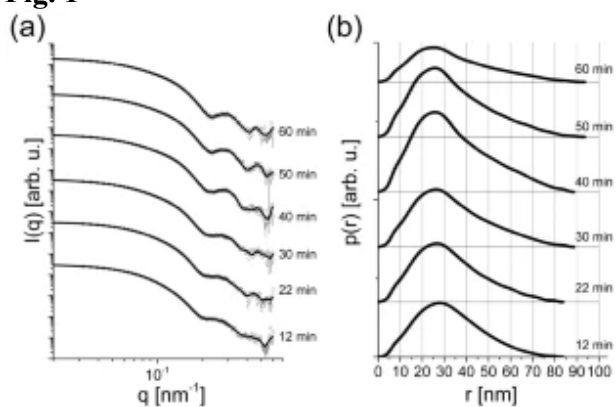


Fig. 2

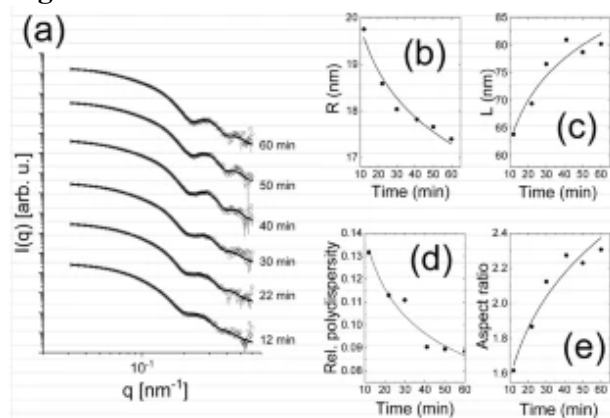


Fig. 3

Fig. 4

Fig. 5

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