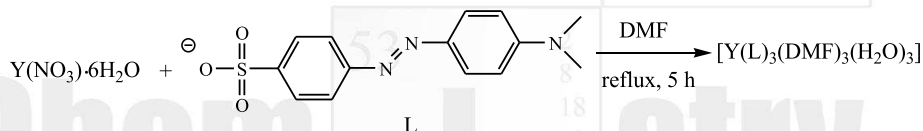


## Synthesis of a new yttrium complex as a precursor for preparation of yttrium oxide nanoparticles

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$Y_2O_3$  in particular is one of the most important rare earth metal oxides in many fields such as gas sensing, catalysts, optics, advanced ceramics and insulators. Over the last few years there has been a great interest in the synthesis and characterization of nanostructured materials because of their unique properties, which are different from those exhibited by microscopic structured or “bulk” materials [1-4]. In this research, at first a new Y(III) complex,  $[Y(L)_3(DMF)_3(H_2O)_3]$ , where L is 4-[(4-dimethylamino)phenyldiazenyl]benzenesulfonate was synthesized and then recrystallized by slow diffusion of acetone into a saturated solution of  $[Y(L)_3(DMF)_3(H_2O)_3]$  in DMF (Scheme 1). In continues, this complex was used as the precursor for the preparation of yttrium oxide nanoparticles by different methods. The products were characterized by X-ray crystallography, elemental analysis, X-ray diffraction (XRD), field emission scanning electron microscopy (FE-SEM), luminescence, Fourier transform infrared (FT-IR) and Ultraviolet-visible (UV-Vis) spectroscopies.



Scheme 1. Synthesis route of  $[Y(L)_3(DMF)_3(H_2O)_3]$  complex.

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