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## Elaboration and characterization of nanosized RuO2-TiO2 powder by Sol Gel route

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Abstract : Mixed metal oxide,  $RuO_2$ -TiO\_2 powders were successfully synthesized via a sol gel method and reflux process by using hydrolysis of titanium oxide nanopowders (prepared in the first stage by sol gel route) with its mixture anatase and rutile phases and RuCl<sub>3</sub> as rhutenium source in water and alcohol. Nanopowders thus prepared are characterized by X-ray diffraction, UV solid, SEM, ATG and FT-IR techniques. The XRD spectrum confirms the complete conversion of RuCl<sub>3</sub> to RuO<sub>2</sub> with the presence of TiO<sub>2</sub> in its anatase phase only, which is due to the conversion of rutile TiO<sub>2</sub> to anatase TiO<sub>2</sub>. The crystallite size calculated from Debye-Scherrer's formula is 9 nm. UV solid study show that the characteristic absorption bands of TiO has a low intensity; this is only due to the strong absorption of RuO<sub>2</sub> by contribution to titanium oxide. It is reported an increase in absorption intensity with the RuO<sub>2</sub> content. This can be attributed to the external effect of resonance related to the excitation of electron collective oscillations in the RuO<sub>2</sub> nanoparticles by the electric field of the electromagnetic wave.

Keywords : nanopowders, sol gel, RuO2-TiO2