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Co doping effect on the TiO2 anatase phase

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$Ti_{1-x}Co_xO_2$ with x changing from zero to 8% of weight was sintered in powder and thin film onto Si (100) substrates by the Sol-Gel technique combined with the dip coating. The crystallization of TiO_2 anatase phase in both powder and thin film samples has been analyzed based on X-ray and Raman spectra. The obtained Raman results show that the anatase phase of TiO_2 thin films formed at a lower temperature compared to that of the powder. The recorded Raman lines characterizing for the anatase phase depend clearly on Co doping concentration, and there are strongest observed for samples doped with 2 wt %. It could be related with the Co solubility and its doping effects on crystallization velocity of the anatase phase of TiO_2.