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## Correlations for coumarin additive on the electrical and photocatalytic activity of TiO2 modified by thiourea

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### Abstract

Doping of TiO2 was made with thiourea to introduce the C, N and S into the TiO2. In order to investigate the effect of coumarin additions, coumarin-doped TiO2 samples modified by thiourea were synthesized by the same method. X-ray diffraction pattern confirmed the anatase crystalline phase in the doped-TiO2 samples. XRD data shows that the addition of coumarin and thiourea does not lead to the rutilization during sample crystallization. In order to investigate the photocatalytic performance of coumarin doped-TiO2 samples, the current-voltage and photocapacitance transient measurements of Au/cou-doped TiO2/p-Si heterojunction structures were carried out under illumination. The variation in the transient decay after illumination follows the different compositions introduced by the addition of coumarin and thiourea. This suggests that there is a correlation between the decay kinetics and the mechanism such as traps and recombination centers provided by the doping level. (c) 2016 Elsevier B.V. All rights reserved.

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