

# **Tailoring crystalline structure in N-doped TiO<sub>2</sub> thin films: application to photocatalytic and biological reactions**

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Photocatalytic reactions at the surface of titanium dioxide (TiO<sub>2</sub>) have been attracting much attention in view of their practical use in environmental, energy and biomedical applications [1]. However, the bandgap of TiO<sub>2</sub> corresponds to maximal wavelength absorptions in the UV. Thus, the development of photocatalysts exhibiting high absorption under visible light should allow a more efficient use of the solar spectrum. The objective of this study was to obtain TiO<sub>2</sub> doped with nitrogen (N-doped) by plasma sputtering in a helicon reactor. Changing the impinging ion energy resulted in changes in the crystalline nanocrystals from anatase to rutile. Moreover, introduction of nitrogen also resulted in changes in the crystalline structure. Results will be presented on the photon absorbance and interaction with blood simulants.

## **References**

[1] A. Fujishima, X.T. Zhang, D.A. Tryk, Surf. Sci. Rep. **63**, 515 (2008).