In this work we carried out a study of phase transition of TiO$_2$ anatase to rutile phase induced by thermal energy supplied by the pellets in a mechanical milling technique and its effect on the interaction with carbon nanotubes. These experiments were performed using a ratio of 1:25 by weight / weight of sample material and pellets, at constant time of 4 hours and different speeds of milling: 350, 400, 450 and 500 rpm. Interactions between the different phases and the CNT and the phase transitions were monitored by micro Raman and UV-vis spectroscopy. It showing the appearance of bands at 261 and 586 cm$^{-1}$ corresponding to the rutile phase, UV-Vis allowed us to determine the interaction between the different phases of TiO$_2$ and carbon nanotubes due to the occurrence of a focused 586 nm band.

**Keywords:** Titanium Dioxide, MWCNT, mechanical milling

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