# **Clays enhanced with niobium: potential in wastewater treatment and reuse as pigment with antibacterial activity**

Silvia Jaerger\*1,2, Patricia Appelt ‡2, Mario Antônio Alves da Cunha ‡3, Fabián Ccahuana Ayma ‡2, Ricardo Schneider ‡1, Carla Bittencourt ‡4, Fauze Jacó Anaissi \*‡2

1Federal University of Technology - Paraná - UTFPR, Campus Toledo, Rua Cristo Rei, 19. 85902-490, Toledo, Brazil.

2Chemistry Department, Universidade Estadual do Centro-Oeste, Guarapuava 85040-167, PR, Brazil.

3 Department of Chemistry, Universidade Tecnológica Federal do Paraná, Pato Branco 85503-390, Brazil;

4 Chimie des Interactions Plasma-Surface (ChIPS), Research Institute for Materials Science and Engineering, University of Mons, 7000 Mons, Belgium

Email: Silvia Jaerger sjaerger@gmail.com and Fauze J. Anaissi anaissi@unicentro.br

\* Corresponding author

‡ Equal contributors

Supplementary Materials



Figure S1: Absorbance spectrum in the visible region for the smectite samples modified with Niobium Oxide (A) and Niobium Phosphate (B) dispersed in colorless paint.



Figure S2: A graph of the CieL\*a\*b\* system highlighting the colorimetric changes of the SMPh and SMOx samples, obtained before and after the adsorption/photocatalysis process of MB in powder form.



Figure S3: A graph of the CieL\*a\*b\* system highlighting the colorimetric changes of the SMPh and SMOx samples, obtained before and after the adsorption/photocatalysis process of MB as a pigment dispersed in clear paint.