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SUPPLEMENTARY MATERIALS

Porous Layered Double Hydroxide/TiO_2 Photocatalysts for the Photocatalytic Degradation of Orange II

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Table SI 1: Comparison of the efficiency of different photocatalyst for OII degradation

Photocatalyst	% of OII photodegradation	Ref
TiO_2 immobilized on glass slides	9%	[1]
TiO_2/SiO_2	26%	[2]
ZnCr- LDH	10%	[3]
ZnCr- LDH calcined at 600°C	18%	[3]
$[MgAl/TiO_2]_{0.66}$	42%	This work
Reduced graphene oxide-TiO_2	95%	[4]

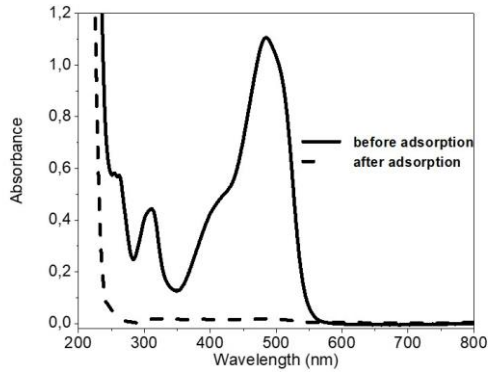

Figure S1. UV-visible spectra of OII (5.10^{-5} M, pH = 9.30) solution in presence of $[Zn_2AlNO_3/TiO_2]_{dry}$ before and after stirring the suspension in the dark

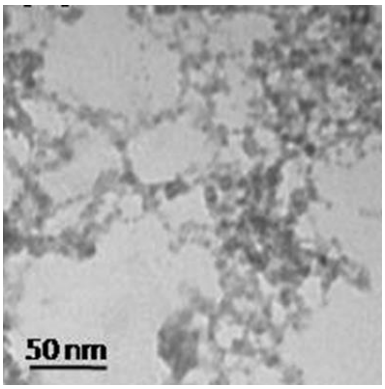

Figure S2. TEM image of TiO_2 nanoparticles aged after titration (pH = 9.30)

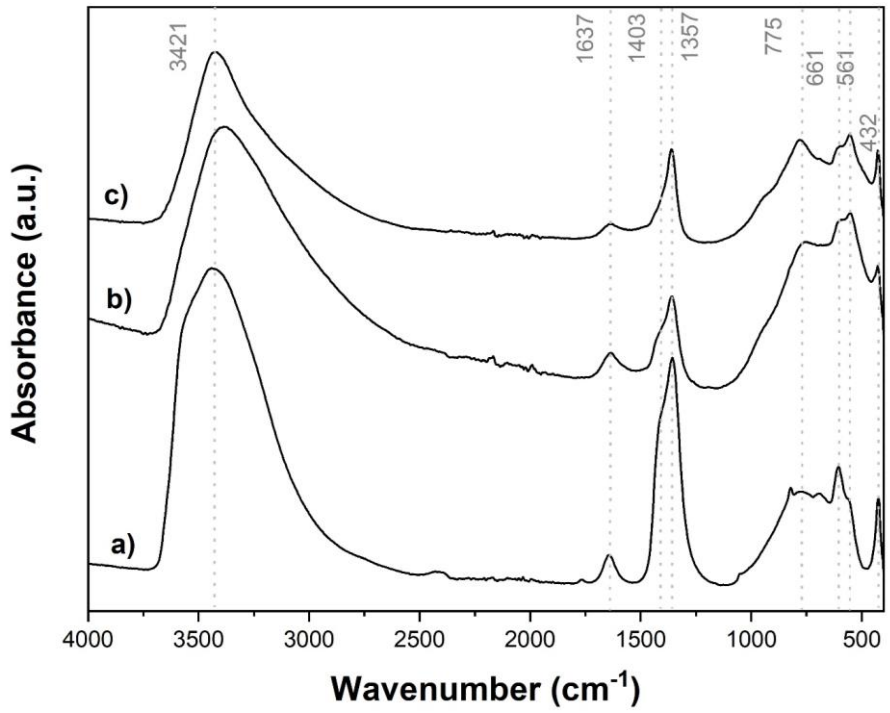

Figure S3. FTIR spectra of compounds obtained by impregnation method a) [Zn_2Al-NO_3] precursor b) [$ZnAl/FreshTiO_2$]$_{2dry}$ and c) [$ZnAl/FreshTiO_2$]$_{2wet}$

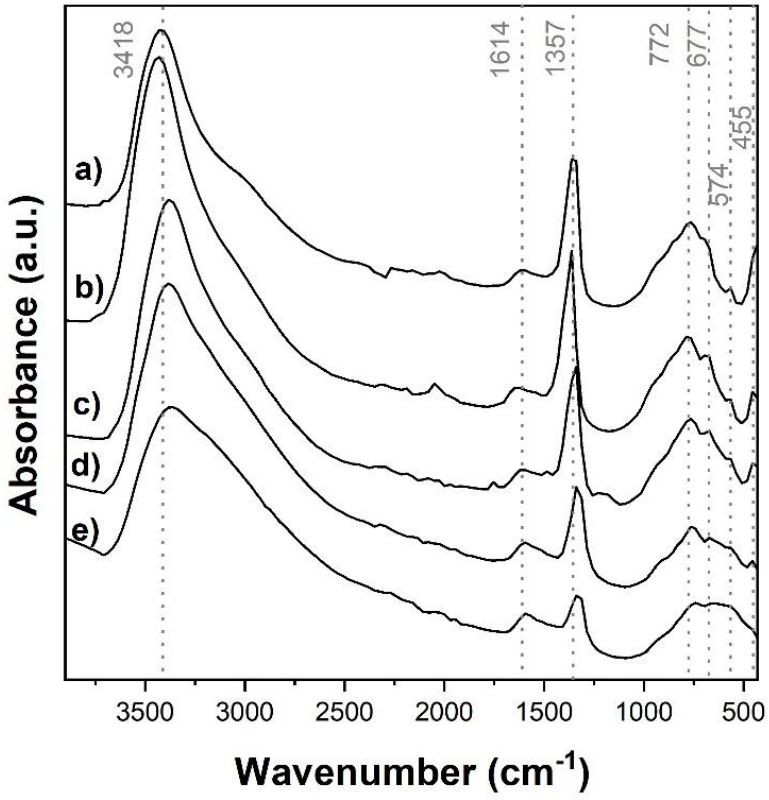

Figure S4. FTIR spectra of [MgAl/TiO_2] nanocomposite obtained by coprecipitation for different MgAl/TiO_2 ratios a) [Mg_2Al-CO_3], b) [MgAl/TiO_2]$_8$, c) [MgAl/TiO_2]$_4$, d) [MgAl/TiO_2]$_2$ and e) [MgAl/TiO_2]$_{0.66}$

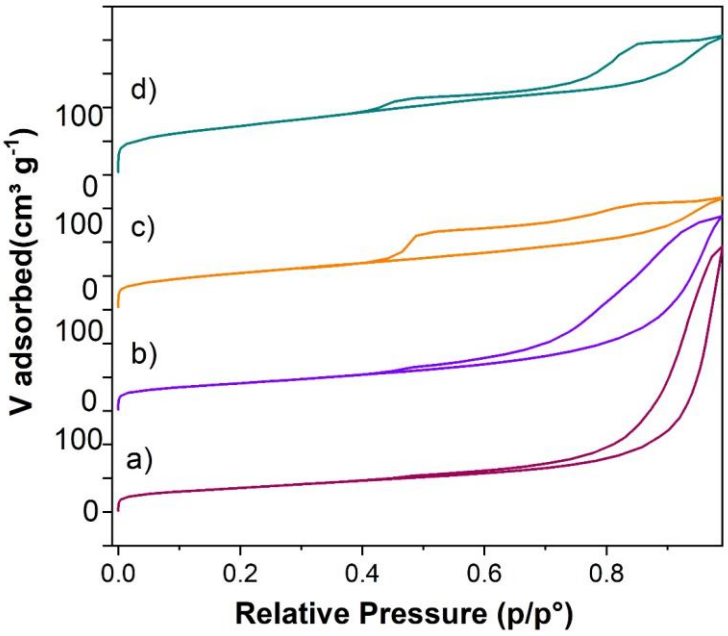

Figure S5. N_2 adsorption-desorption isotherms of a) $[MgAl/TiO_2]_8$, b) $[MgAl/TiO_2]_4$, c) $[MgAl/TiO_2]_2$ and d) $[MgAl/TiO_2]_{0.66}$

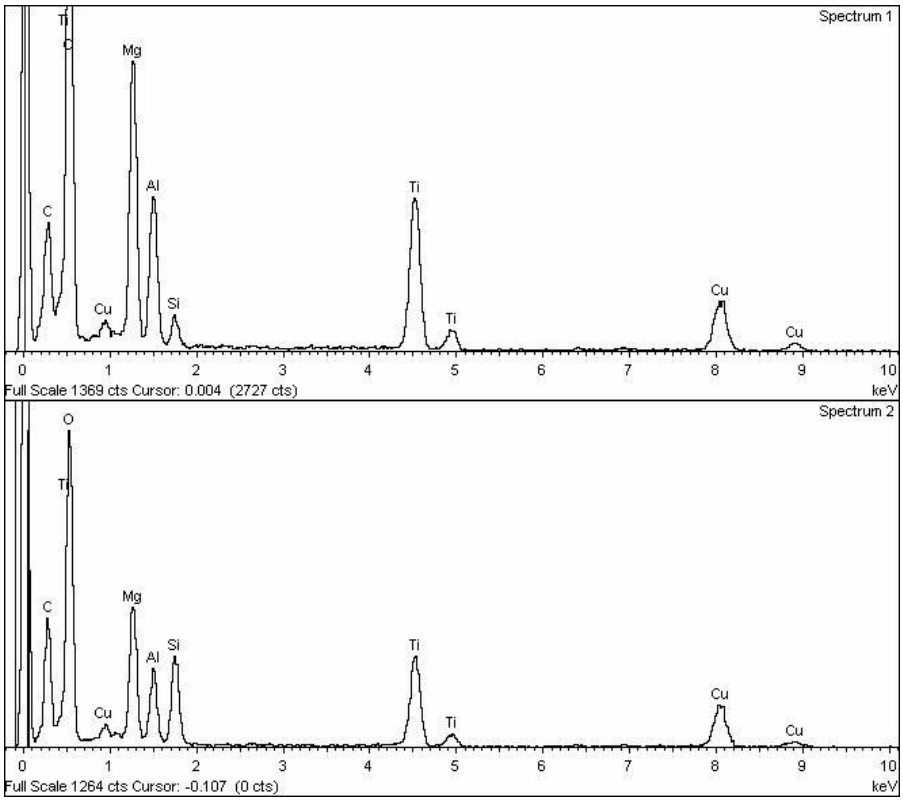

Figure S6. EDX spectra from TEM

References:

1. Onam Onyatta, J., Kimutai Tum, P., Kithure, J.G.N., and Oduor, F.D.O. (2016). Photocatalytic degradation of acid Orange II dye on selected commercial titanium dioxide catalysts. *Int. J. of Adv. Res.* **4,** 1149-1155.

2. Paušová, Š., Krýsa, J., Jirkovský, J., Prevot, V., and Mailhot, G. (2014). Preparation of TiO2-SiO2 composite photocatalysts for environmental applications. *J. Chem. Tech. Biotech.* 89**,** 1129-1135.

3. Paušová, Š., Krýsa, J., Jirkovský, J., Forano, C., Mailhot, G., and Prevot, V. (2015). Insight into the photocatalytic activity of ZnCr–CO3 LDH and derived mixed oxides. *Appl. Catal B* 170-171**,** 25-33.

4. Li, T., Wang, T., Qu, G., Liang, D., and Hu, S. (2017). Synthesis and photocatalytic performance of reduced graphene oxide–TiO2 nanocomposites for orange II degradation under UV light irradiation. *Environ. Sci. Pollut. Res.* 24**,** 12416-12425.