

1 Supplementary materials

2 Efficient N, Fe Co-Doped TiO₂ Active under Cost- 3 Effective Visible LED Light: From Powders to Films

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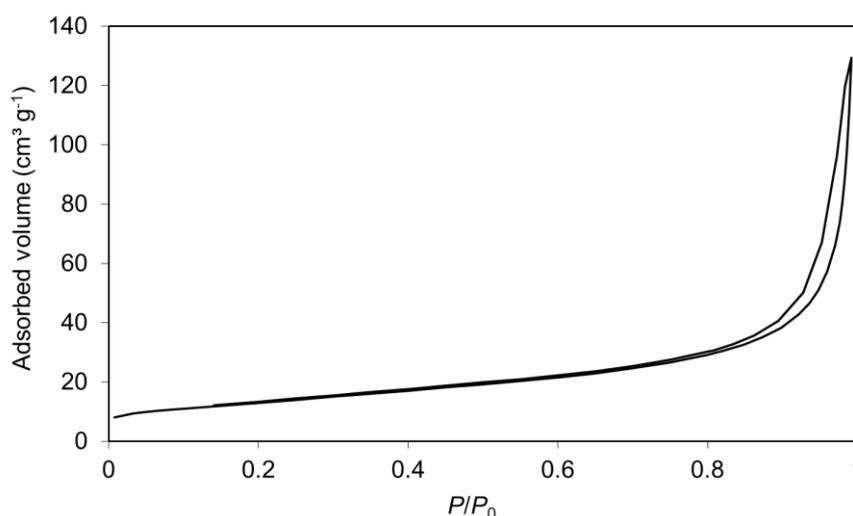
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15 The isotherm of Evonik P25 is presented in Figure S1. It corresponds typically to a macroporous
16 solid. At high pressure, the adsorbed volume increases asymptotically like in type II isotherm
17 (macroporous solid).



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Figure S1. Nitrogen adsorption–desorption isotherm of Evonik P25.

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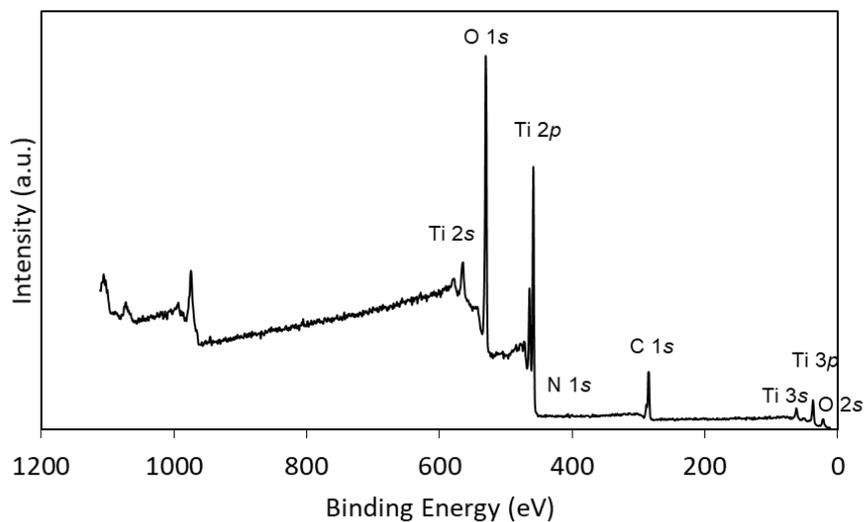
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The survey X-ray photo-electron spectroscopy (XPS) spectrum for the pure TiO₂ sample is presented in Figure S2. The different peaks (carbon, oxygen, nitrogen, titanium) are labelled. Similar spectra were obtained for all other samples. The intensity of the peaks representative of nitrogen is too low to make them visible on the general spectrum. Iron is not detected by XPS. This is probably due to the small amount and homogeneous distribution of iron in the sample.



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Figure S2. XPS general spectrum of the pure TiO₂ sample.

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The results of the leaching experiments are presented in Table S1 for the different coatings.

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Table S1. Ti and Fe leaching for the TiO₂/Fe_{0.5} colloid deposited on various surfaces after 48 h in water.

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Sample	Ti leaching (ppm)	Fe leaching (ppm)
Brushed steel	<0.01	<0.03
Brushed steel + SiO ₂ sublayer	<0.01	<0.03
Brushed steel + TiO ₂ sublayer	<0.01	<0.03
Bare steel	<0.01	<0.03
Bare steel + SiO ₂ sublayer	<0.01	<0.03
Bare steel + TiO ₂ sublayer	<0.01	<0.03
Glass	<0.01	<0.03
Glass + TiO ₂ sublayer	<0.01	<0.03

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Figure S3 presents the large-scale suspension of TiO₂/Fe_{0.5} (10 L) and the pilot glass reactor used for this synthesis.

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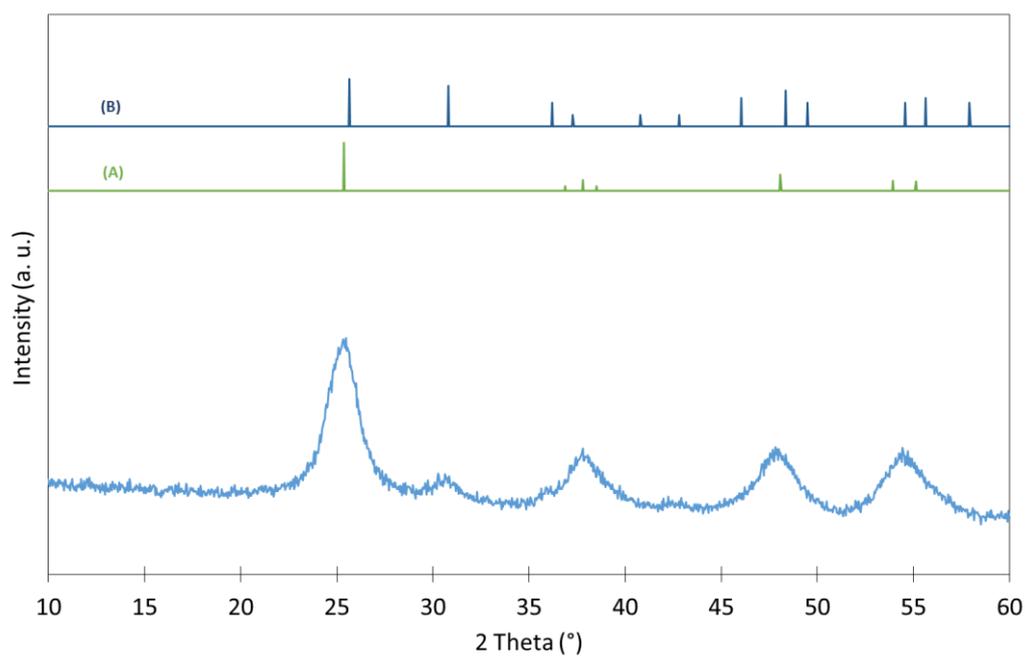


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Figure S3. Large-scale suspension of TiO₂/Fe_{0.5} and the pilot reactor used for its synthesis.

35 The XRD pattern of the large-scale $\text{TiO}_2/\text{Fe}_{0.5}$ sample is presented in Figure S4.



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37 **Figure S4.** XRD patterns of the large-scale $\text{TiO}_2/\text{Fe}_{0.5}$ sample. (A) Reference pattern of anatase and (B)
38 Reference pattern of brookite.

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