

## Supporting Information

### Selective Photocatalytic Oxidation of 4-Substituted Aromatic Alcohols in Water with Rutile TiO<sub>2</sub> Prepared at Room Temperature

Sedat Yurdakal,<sup>a,b</sup> Giovanni Palmisano,<sup>a</sup> Vittorio Loddo,<sup>a</sup> Oğuzhan Alagöz,<sup>c</sup>  
Vincenzo Augugliaro,<sup>\*a</sup> Leonardo Palmisano<sup>\*a</sup>

<sup>a</sup>“Schiavello-Grillone” Photocatalysis Group - Dipartimento di Ingegneria Chimica  
dei Processi e dei Materiali, Università degli Studi di Palermo, Viale delle Scienze,  
90128 Palermo, Italy. augugliaro@dicpm.unipa.it; palmisano@dicpm.unipa.it.

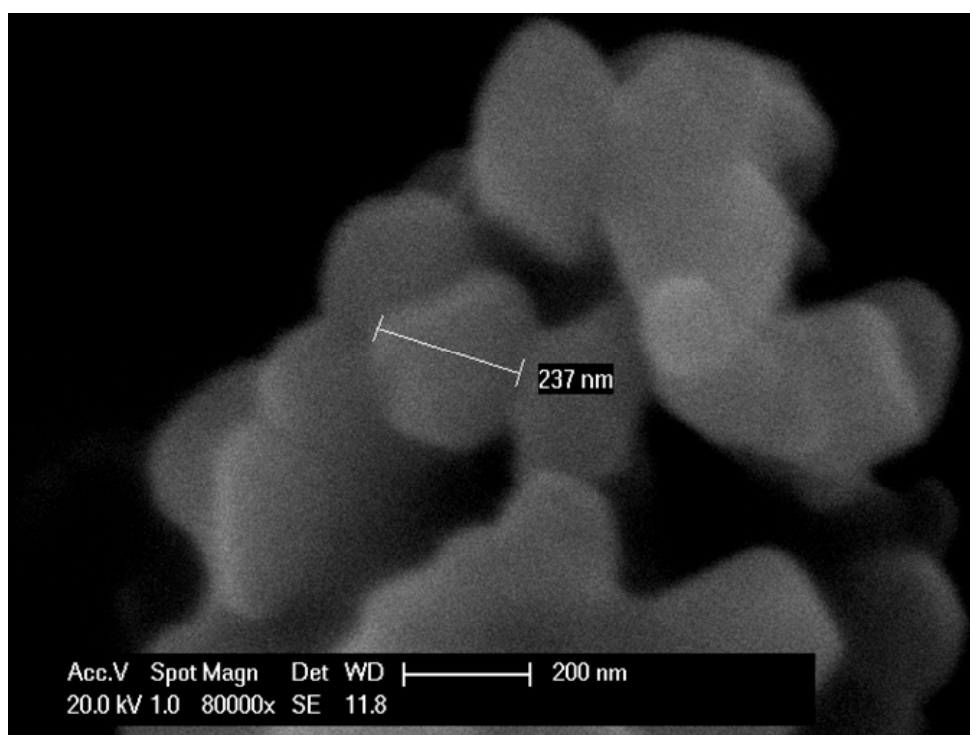
<sup>b</sup>Kimya Bölümü, Fen Fakültesi, Anadolu Üniversitesi, Yunus Emre Kampüsü, 26470  
Eskişehir, Turkey.

<sup>c</sup>Kimya Bölümü, Fen Fakültesi, Ankara Üniversitesi, Tandoğan, 06100, Ankara, Turkey.

### SEM Images

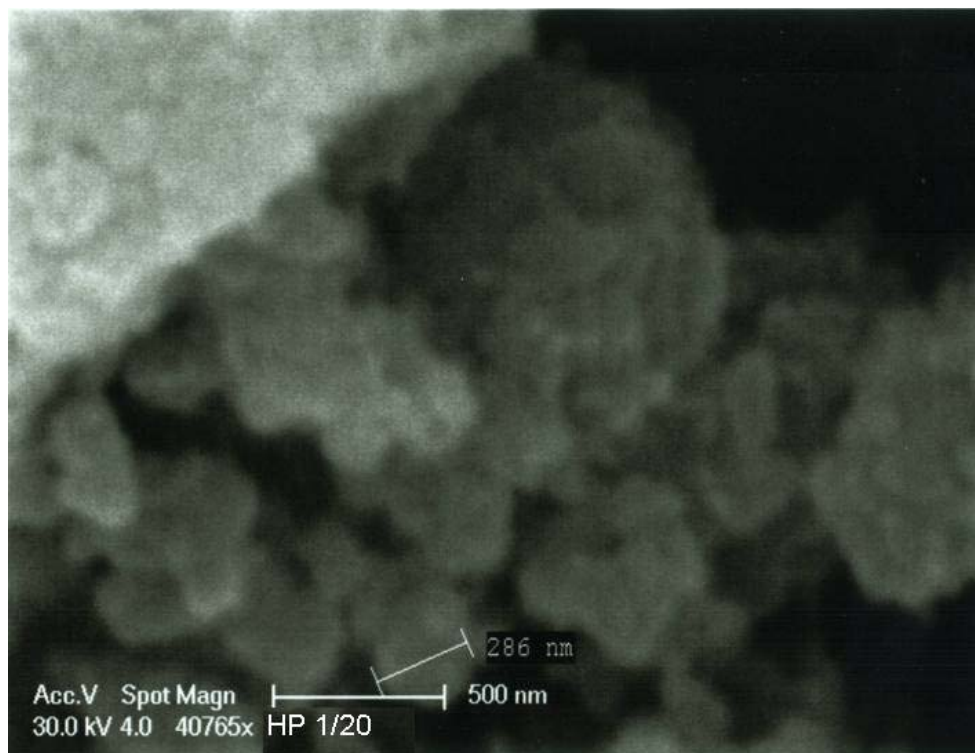
SEM images were recorded in order to measure the particles agglomerations. SEM images of home-made rutile photocatalysts prepared at room temperature are presented below along with the commercial sample (Sigma Aldrich, rutile) used for the sake of comparison.

#### SIGMA-ALDRICH



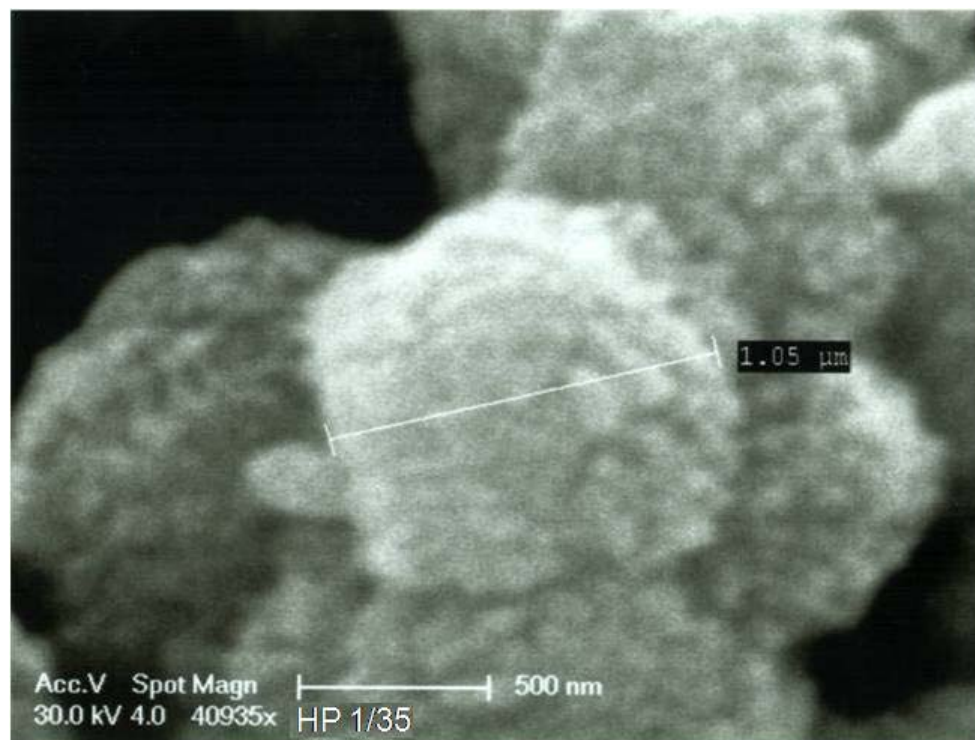
(a)

### HP1/20



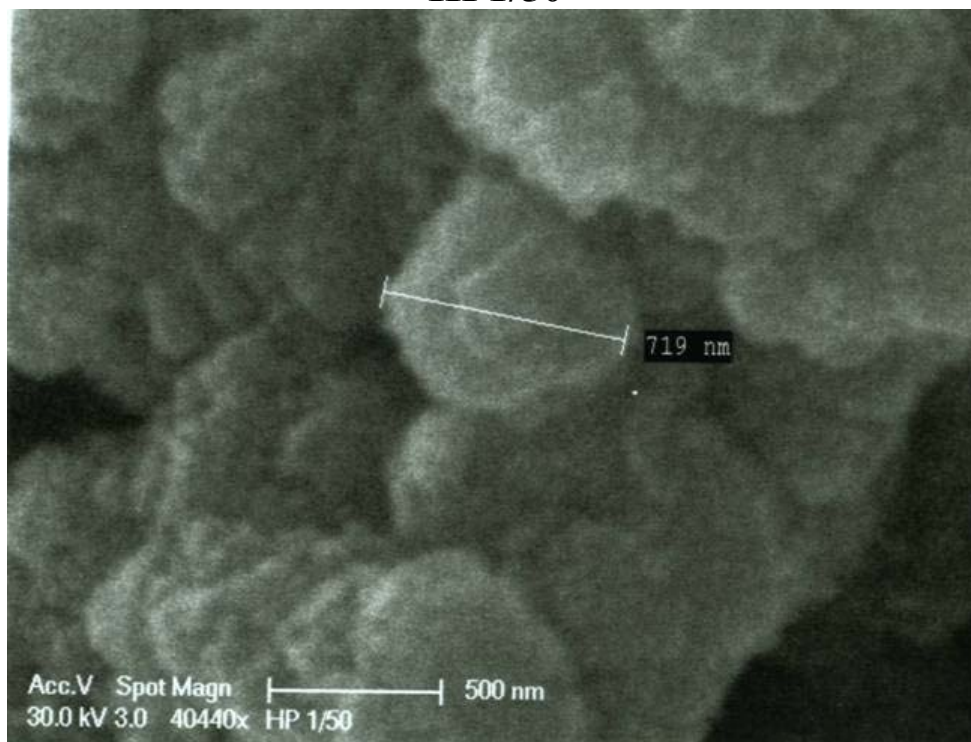
(b)

### HP1/35



(c)

### HP1/50



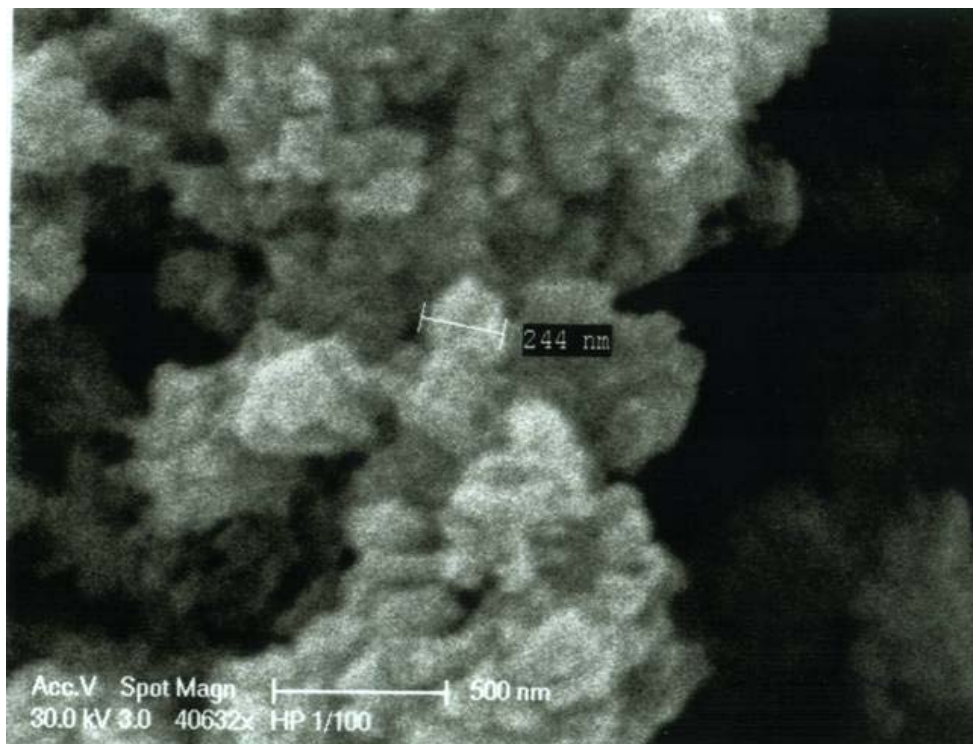
(d)

### HP1/75



(e)

### HP1/100



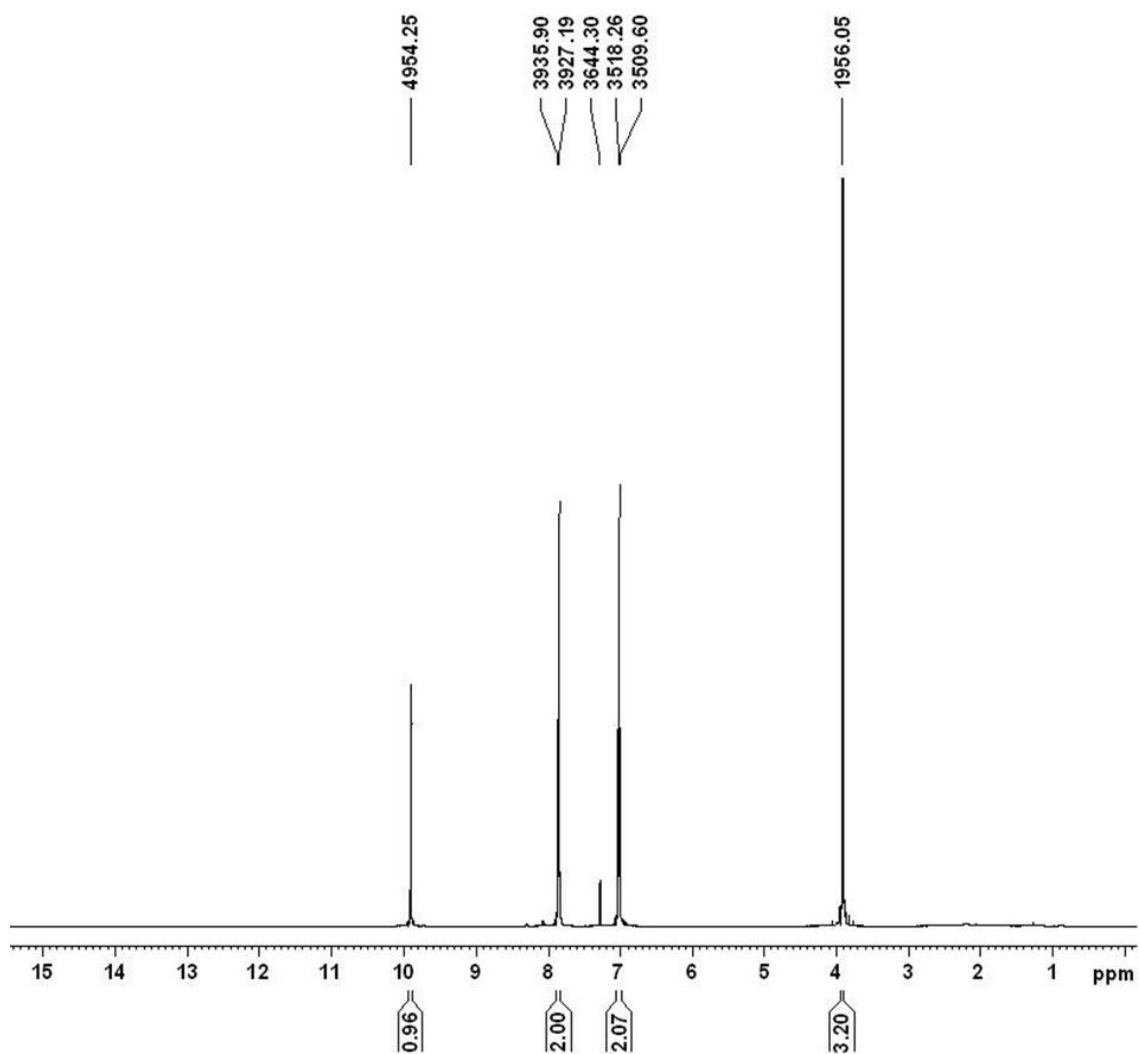
(f)

**Figure S1.** Selected SEM micrographs of rutile Sigma Aldrich sample (a) and home prepared (b-f) TiO<sub>2</sub> samples.

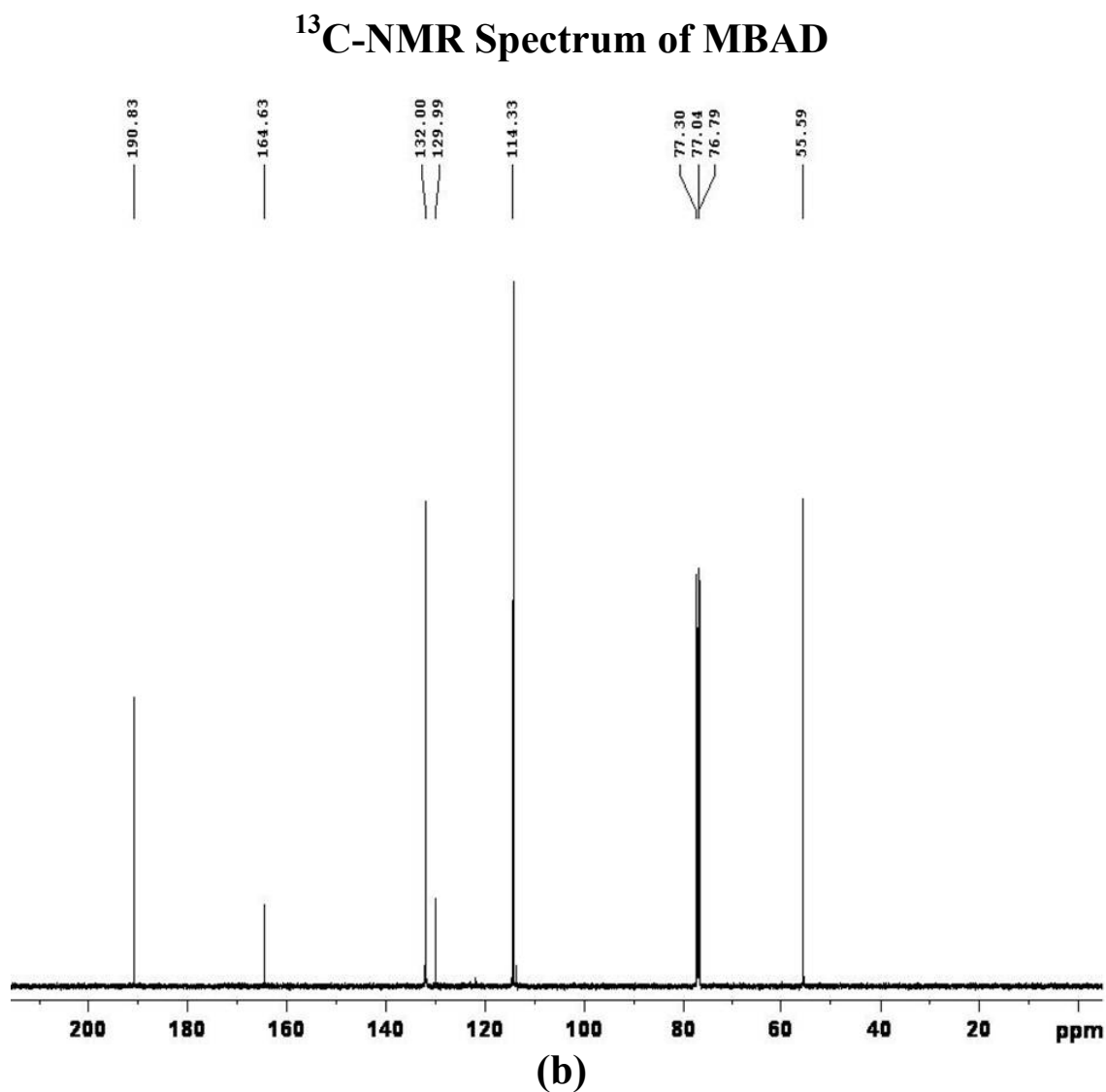
### NMR Analysis

Figure S2 shows the NMR <sup>1</sup>H and <sup>13</sup>C spectrum of 4-methoxybenzyl aldehyde, MBAD, (the main partial oxidation product of 4-methoxybenzil alcohol). It can be noticed that no peaks coming from impurity are present thus indicating that the aldehyde is quite pure, more than 99%.

### <sup>1</sup>H-NMR Spectrum of MBAD



(a)



**Figure S2**  $^1\text{H}$  (a) and  $^{13}\text{C}$  (b) NMR spectra of purified MBAD of a representative sample in the presence of the best selective rutile photocatalyst HP1/50.