



## Article

## Steam Reforming of Methanol over Nanostructured Pt/TiO<sub>2</sub> and Pt/CeO<sub>2</sub> Catalysts for Fuel Cell Applications

## Joan Papavasiliou <sup>1,2,\*</sup>, Alexandra Paxinou <sup>1,2</sup>, Grzegorz Słowik <sup>3</sup>, Stylianos Neophytides <sup>2</sup> and George Avgouropoulos <sup>1,\*</sup>

- <sup>1</sup> Department of Materials Science, University of Patras, GR-26504 Patras, Greece; paxinou@upatras.gr
- <sup>2</sup> Foundation for Research and Technology-Hellas (FORTH), Institute of Chemical Engineering Sciences (ICE-HT), P.O. Box 1414, GR-26504 Patras, Greece; neoph@iceht.forth.gr
- <sup>3</sup> Faculty of Chemistry, University of Maria Curie-Skłodowska, Pl. M. Curie-Skłodowskiej 2, 20-031 Lublin, Poland; grzegorz.slowik@poczta.umcs.lublin.pl
- \* Correspondence: jpapav@iceht.forth.gr (J.P.); geoavg@upatras.gr (G.A.); Tel.: +30-2610-965319 (J.P.); +30-2610-969811 (G.A.)

Received: 30 October 2018; Accepted: 10 November 2018; Published: 13 November 2018

**Author Contributions:** Conceptualization, G.A. and S.N.; investigation and formal analysis, J.P.; investigation, A.P. and G.S.; writing—original draft preparation, J.P.; writing—review and editing, G.A.

Funding: This research received no external funding.

Acknowledgments: Financial support from The Fuel Cells and Hydrogen Joint Undertaking (FCH-JU-2012-1; Grant agreement No. 325358) is gratefully acknowledged.

**Conflicts of Interest:** The authors declare no conflict of interest.

Supplementary Information



Figure S1. EDX mapping on the reduced 2.35 wt.% Pt/TNTs(DP).



Figure S2. EDX mapping on the reduced 3 wt.% Pt/TNTs (I).



Figure S3. EDX mapping on the reduced 3 wt.% Pt/CNRs (I).





Figure S4. EDX mapping on the reduced 2.45 wt.% Pt/CNRs (DP).



Figure S5. N2 Adsorption/desorption isotherms and pore size distribution (BJH isotherms) for TNTs.



Figure S6. N2 Adsorption/desorption isotherms and pore size distribution (BJH isotherms) for CNRs.





**Figure S7.** N2 Adsorption/desorption isotherms (top) and pore size distribution (BJH isotherms) (bottom) for Pt/TNTs (I) (a), (c) and Pt/TNTs (DP) (b), (d).



**Figure S8.** N2 Adsorption/desorption isotherms (left) and pore size distribution (BJH isotherms) (right) for 3 wt.% Pt/CNRs (I) (a), (b), 2.45 wt.% Pt/CNRs (DP) (c), (d) and 0.3 wt.% Pt/CNRs (DP) (e), (f).

© 2018 by the authors. Submitted for possible open access publication under the terms and conditions of the  $C_{\rm C}$  ( $C_{\rm C}$  =  $B_{\rm C}$ ) license



Creative Commons Attribution (CC BY) license (http://creativecommons.org/licenses/by/4.0/).