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PII: S0926-3373(18)30724-0
DOI: https://doi.org/10.1016/j.apcatb.2018.08.003
Reference: APCATB 16903

To appear in: *Applied Catalysis B: Environmental*

Received date: 10-6-2018
Revised date: 27-7-2018
Accepted date: 1-8-2018

Please cite this article as: Tasbihi M, Fresno F, Simon U, Villar-García IJ, Pérez-Dieste V, Escudero C, de la Peña O'Shea VA, On the selectivity of CO_2 photoreduction towards CH_4 using Pt/TiO_2 catalysts supported on mesoporous silica, *Applied Catalysis B: Environmental* (2018), https://doi.org/10.1016/j.apcatb.2018.08.003

On the selectivity of CO_2 photoreduction towards CH_4 using Pt/TiO_2 catalysts supported on mesoporous silica

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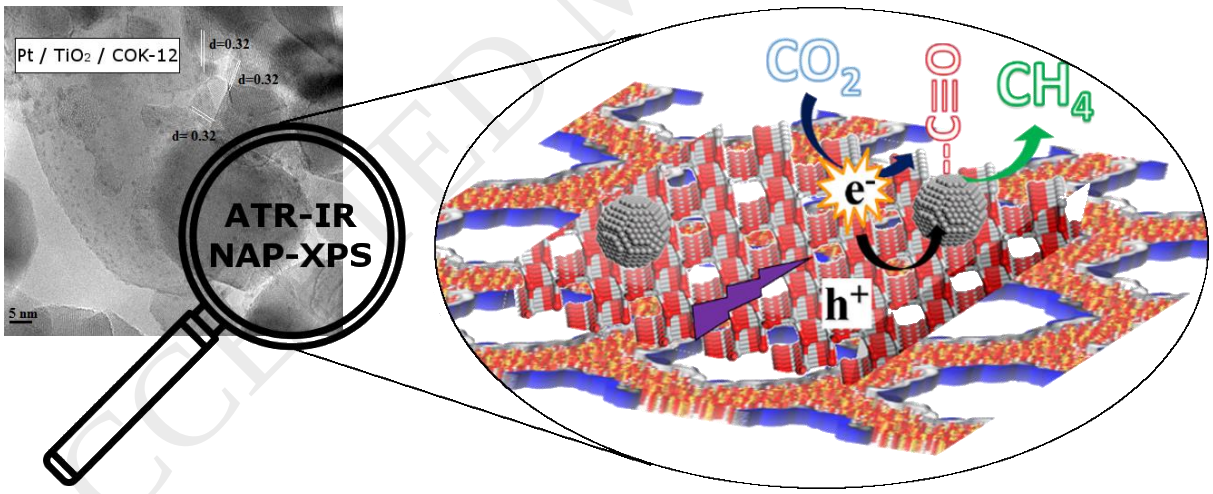
Graphical Abstract



Highlights

- Photocatalytic CO_2 reduction has been studied over Pt/TiO_2/COK-12 catalysts
- Pt decoration of TiO2 leads to preferential CH_4 formation against CO obtained with bare TiO2.
- Supporting Pt/TiO2 on mesoporous silica preserves selectivity while increasing overall activity
- ATR-FTIR and NAP-XPS have been used to elucidate the pathways leading to CH_4 selectivity.