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# On the selectivity of CO<sub>2</sub> photoreduction towards CH<sub>4</sub> using Pt/TiO<sub>2</sub> catalysts supported on mesoporous silica

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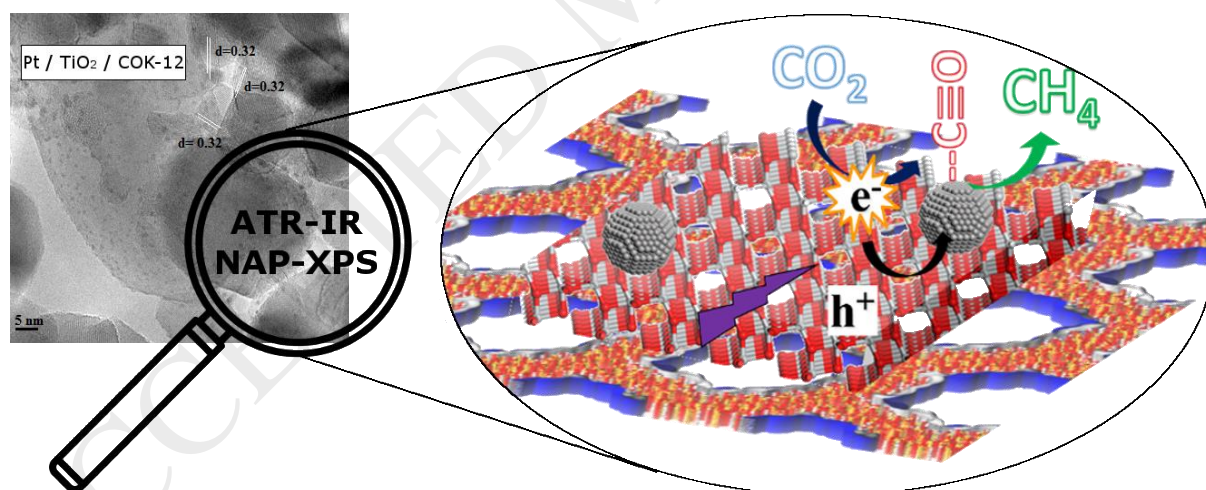
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## Graphical Abstract



## Highlights

- Photocatalytic CO<sub>2</sub> reduction has been studied over Pt/TiO<sub>2</sub>/COK-12 catalysts
- Pt decoration of TiO<sub>2</sub> leads to preferential CH<sub>4</sub> formation against CO obtained with bare TiO<sub>2</sub>.
- Supporting Pt/TiO<sub>2</sub> on mesoporous silica preserves selectivity while increasing overall activity
- ATR-FTIR and NAP-XPS have been used to elucidate the pathways leading to CH<sub>4</sub> selectivity.

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