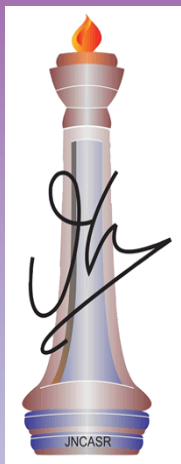


# Winter School

06.12.21\_10.12.21

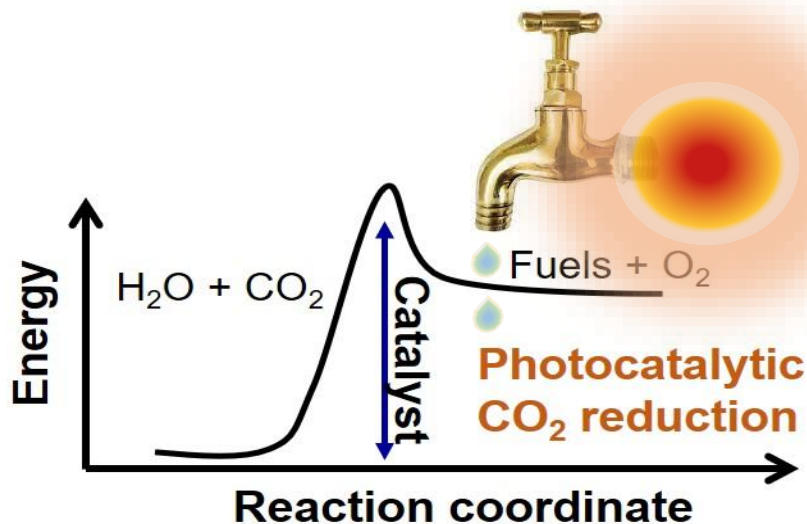


Risov Das

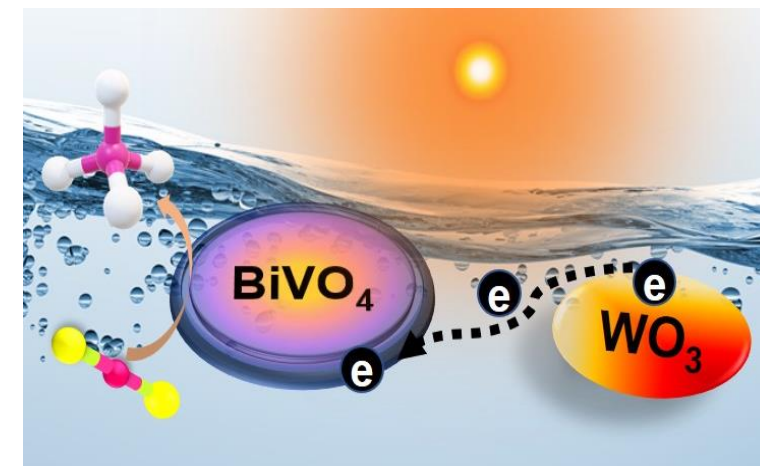
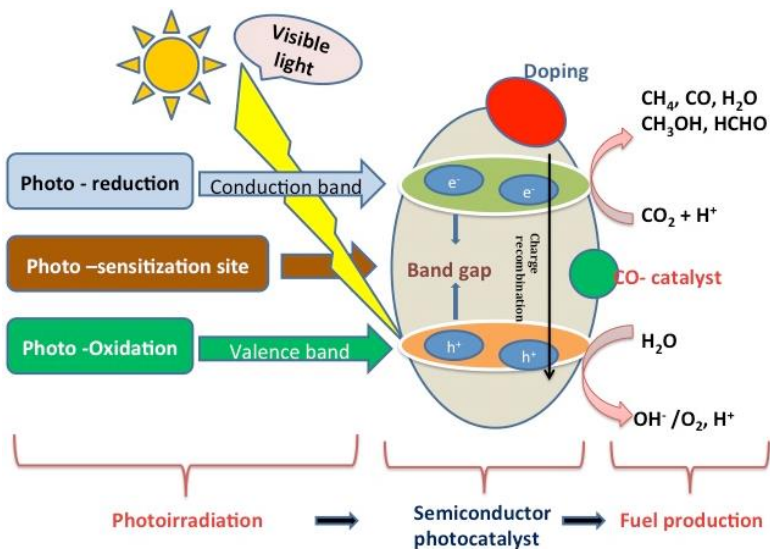
Under the guidance of  
Prof. Sebastian C. Peter

## Noble Metal Free Heterojunction Photocatalyst for Selective CO<sub>2</sub> Reduction to Methane upon Induced Strain Relaxation

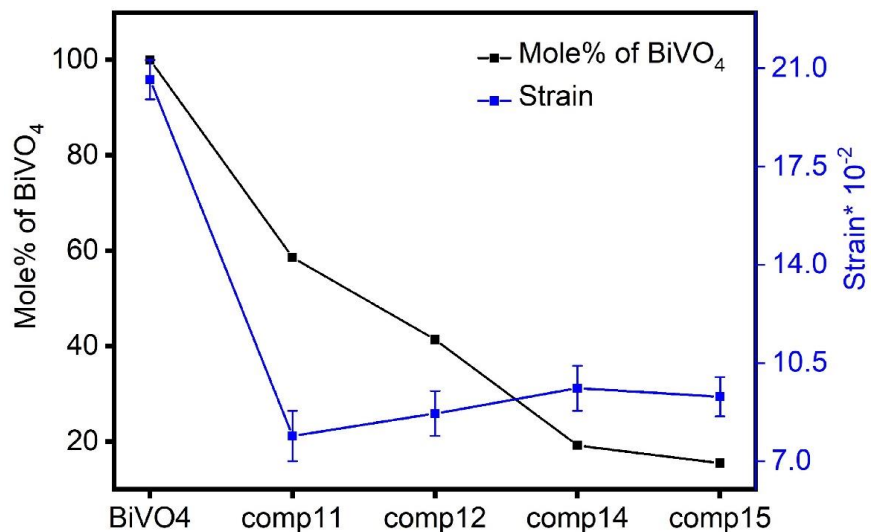
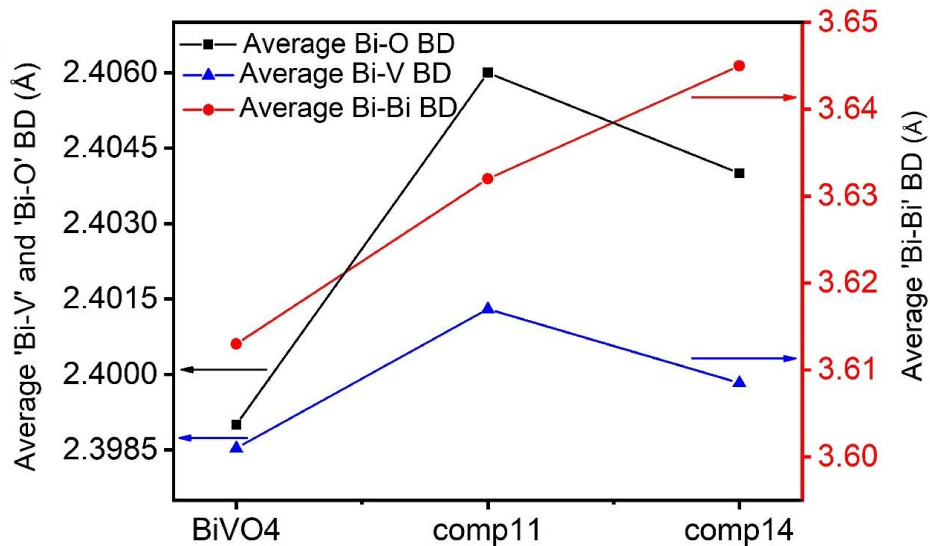
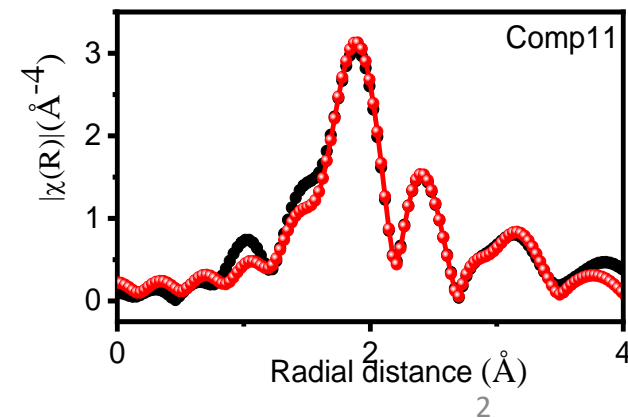
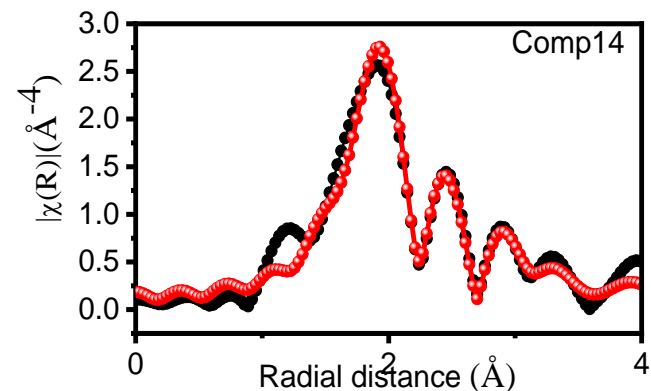
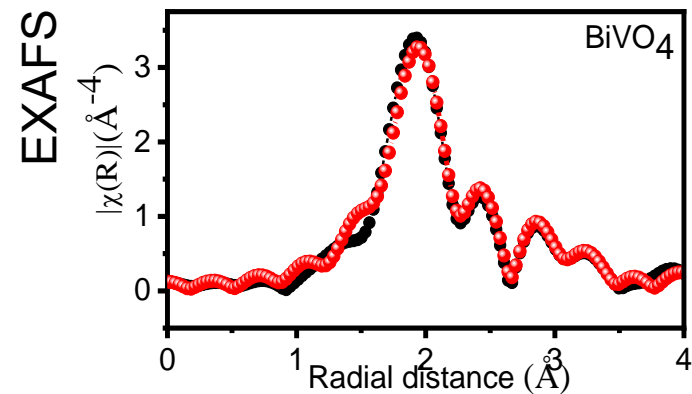
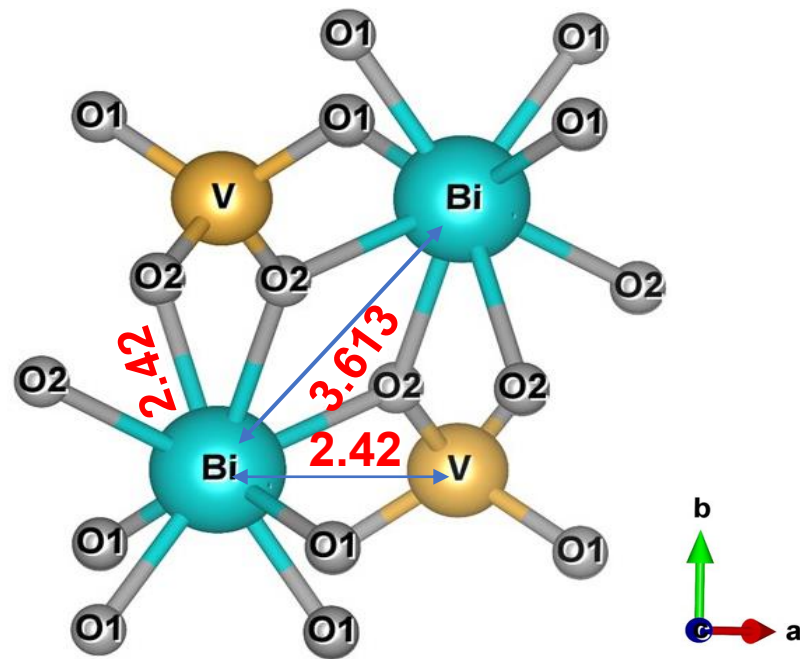
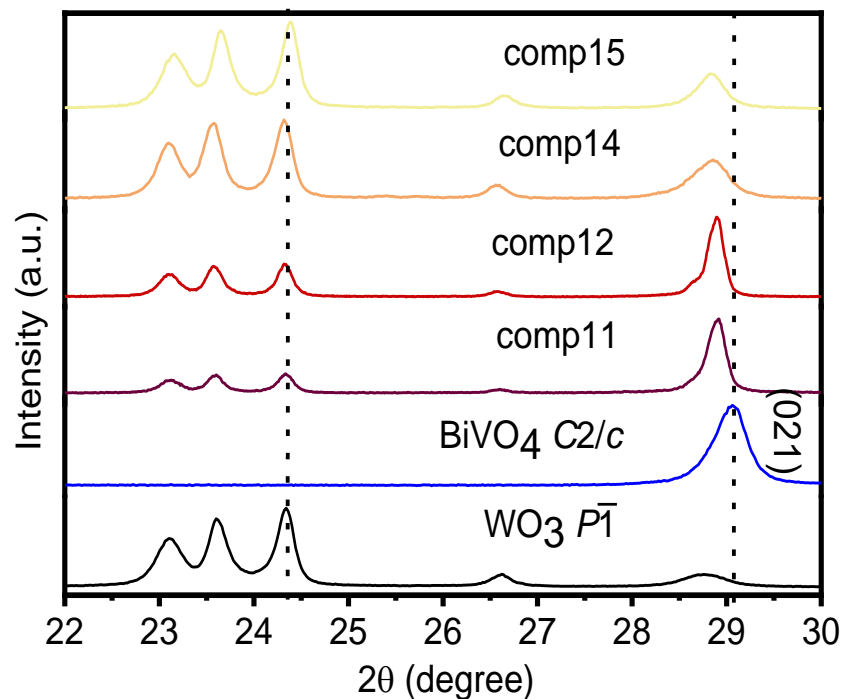
Just Accepted in *ACS Catal.*



- ❑ Recombination of Photogenerated charges
- ❑ Solubility of CO<sub>2</sub> in water
- ❑ Competing HER
- ❑ Unknown reaction and charge Transfer mechanism

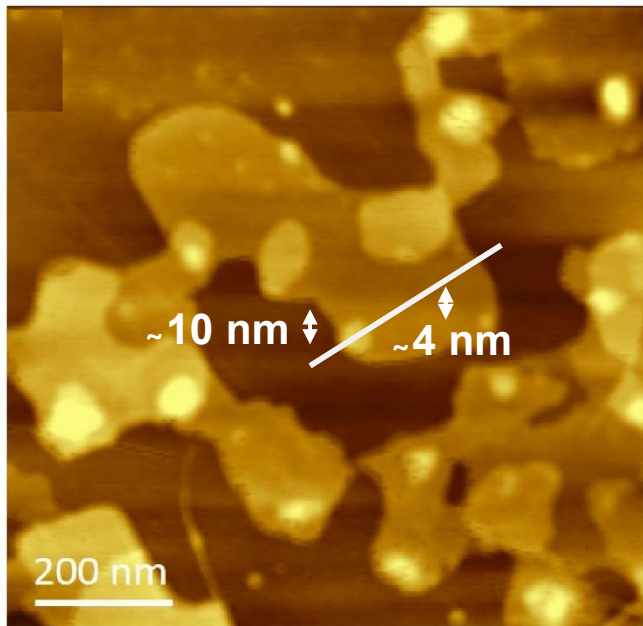


# Characterization

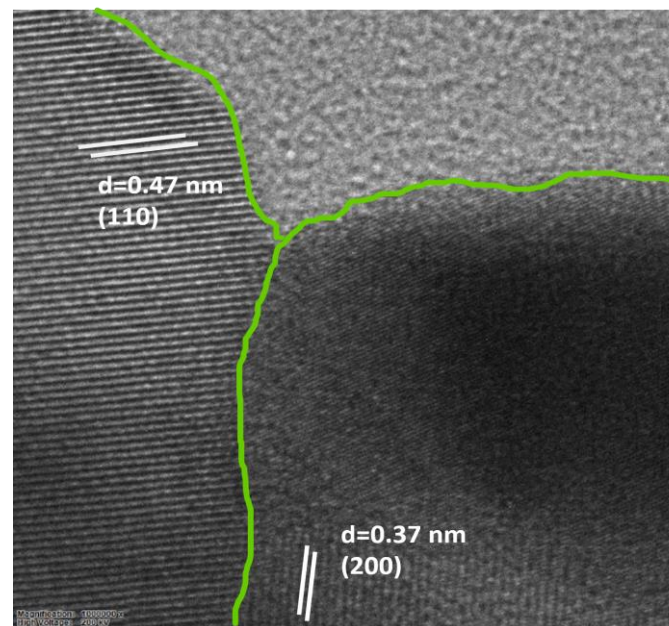


# Understanding Structural Phenomenon

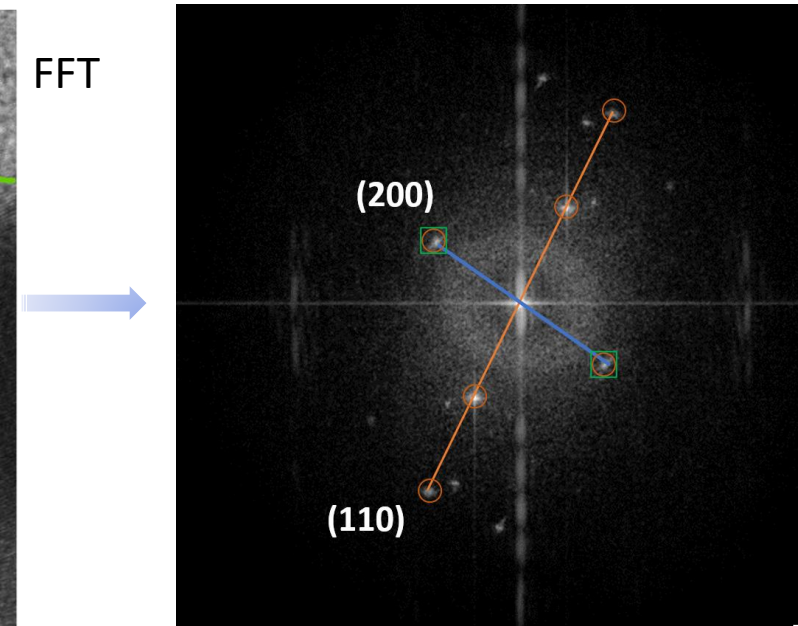
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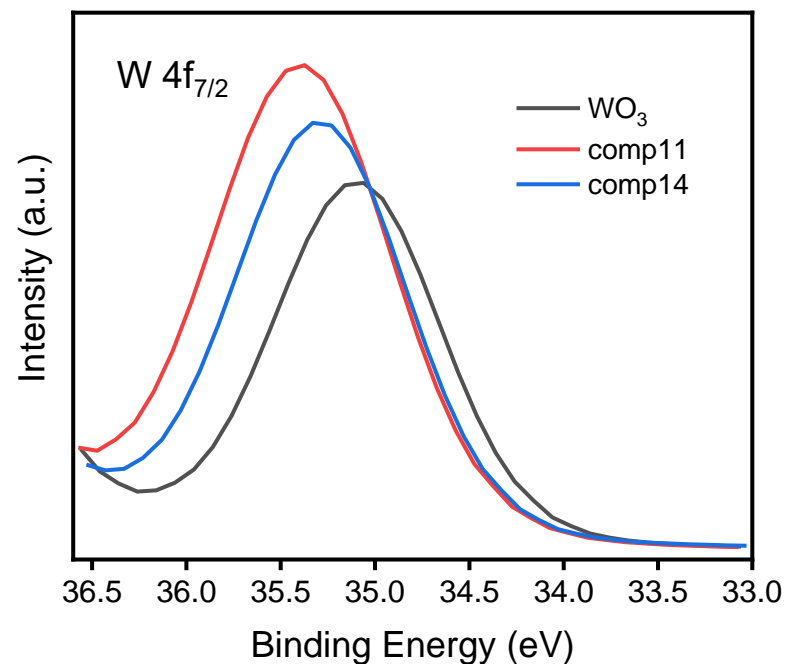
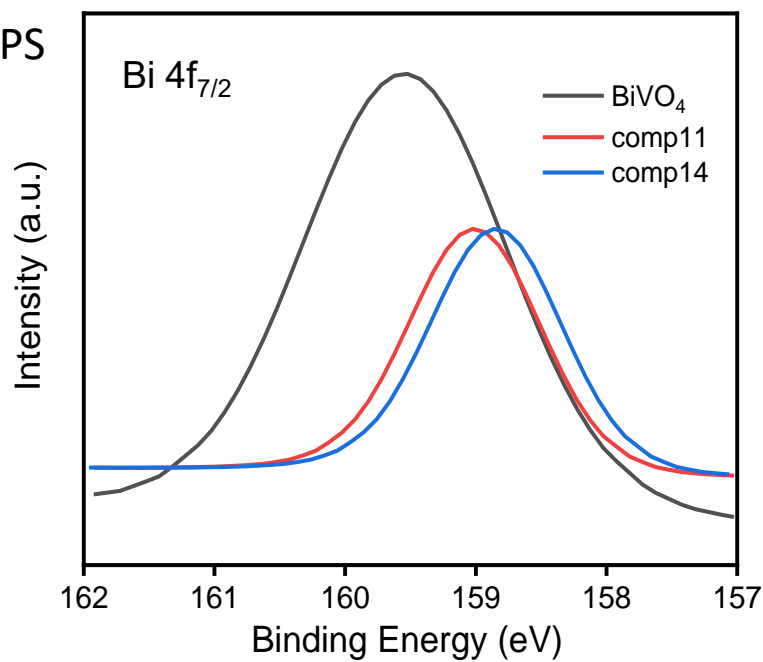
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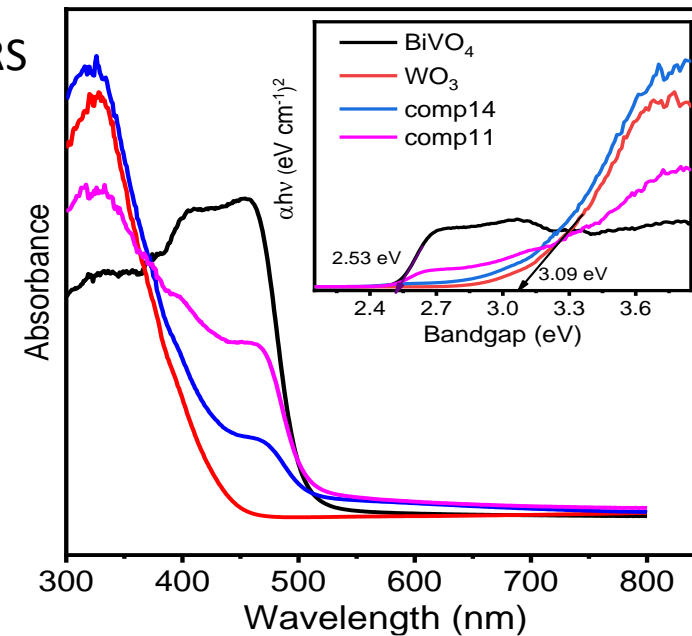
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XPS

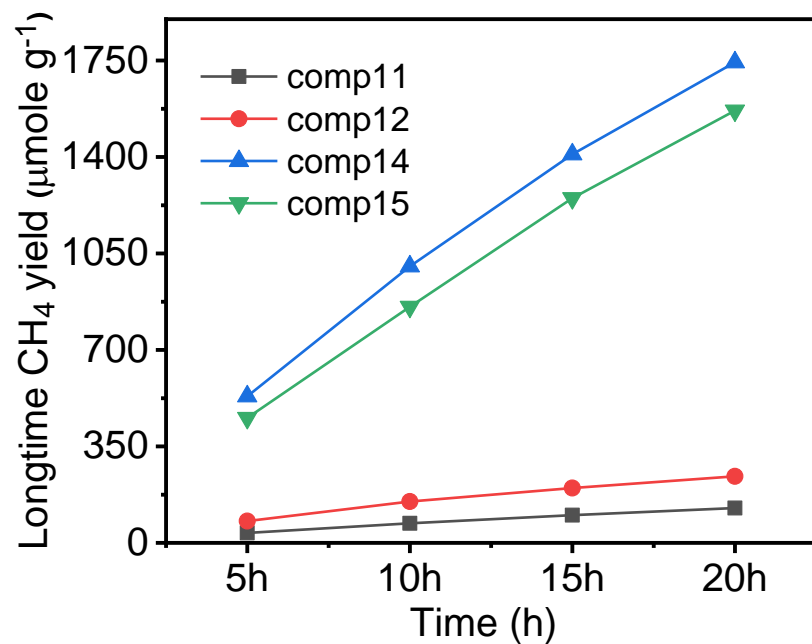
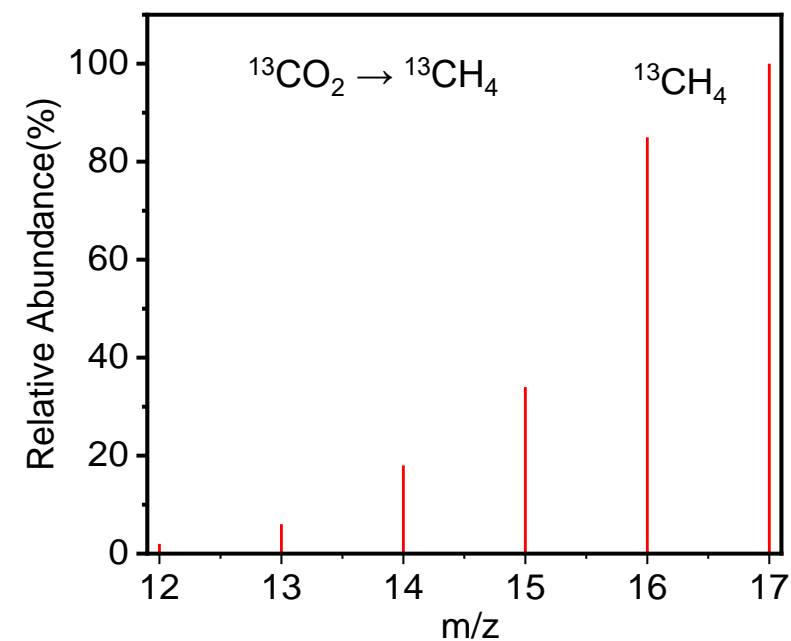
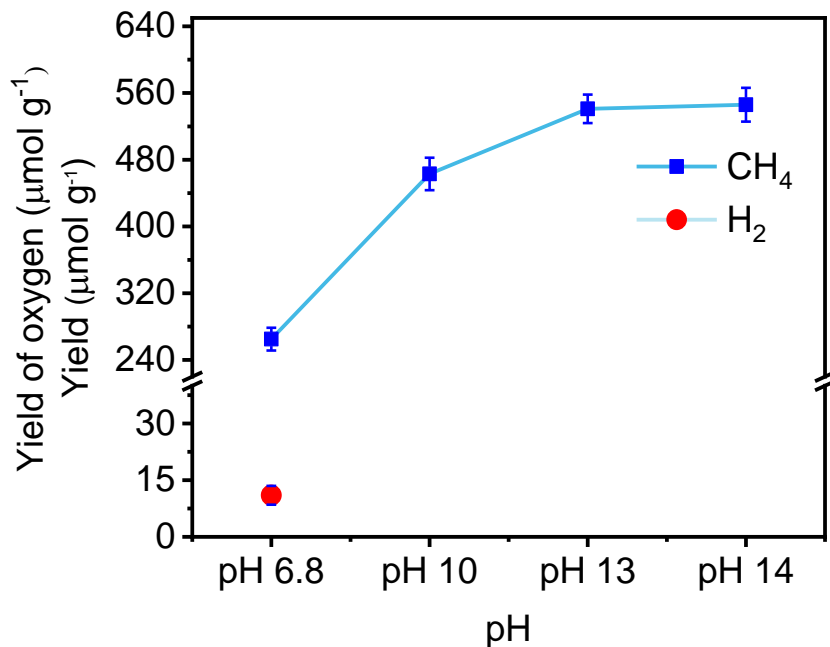
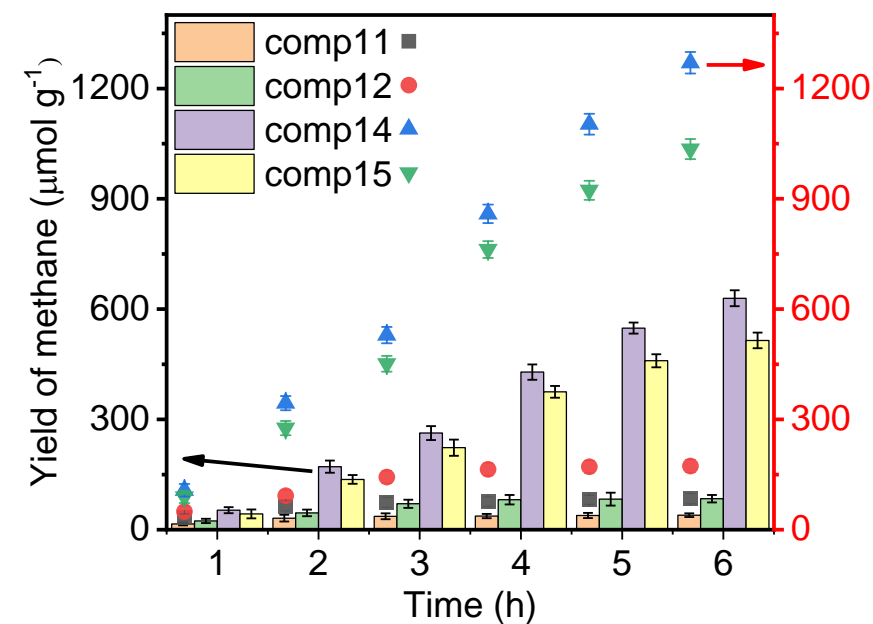


DRS

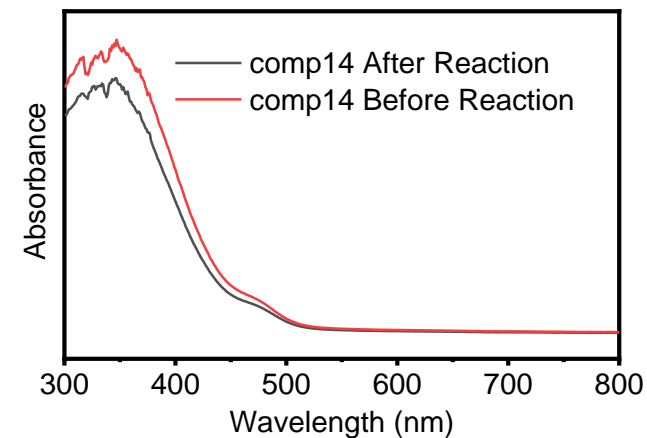
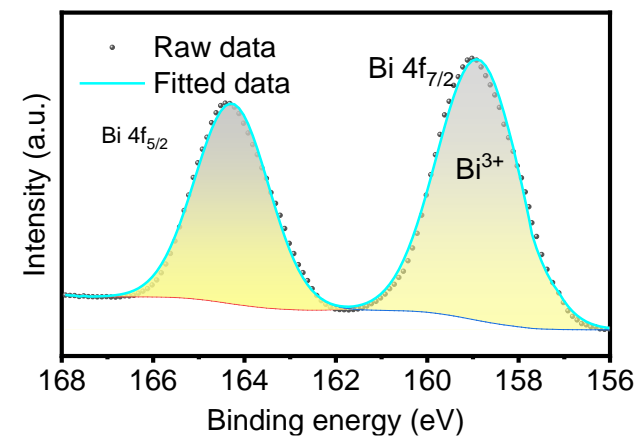
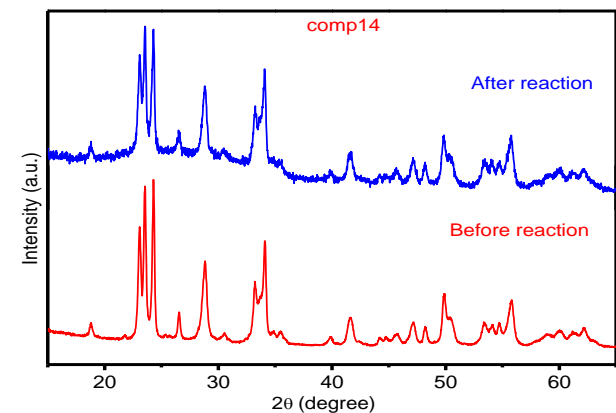




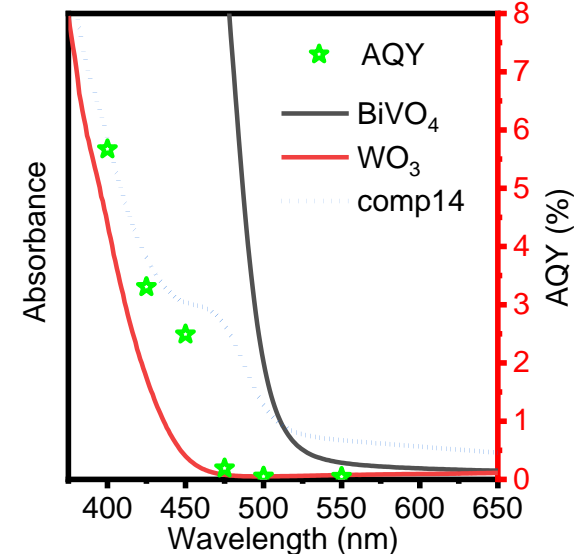
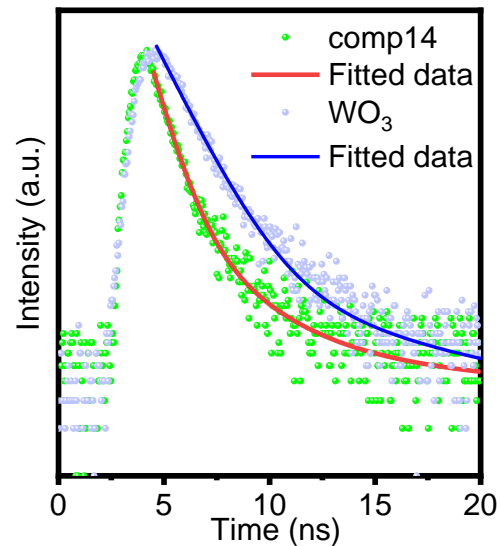
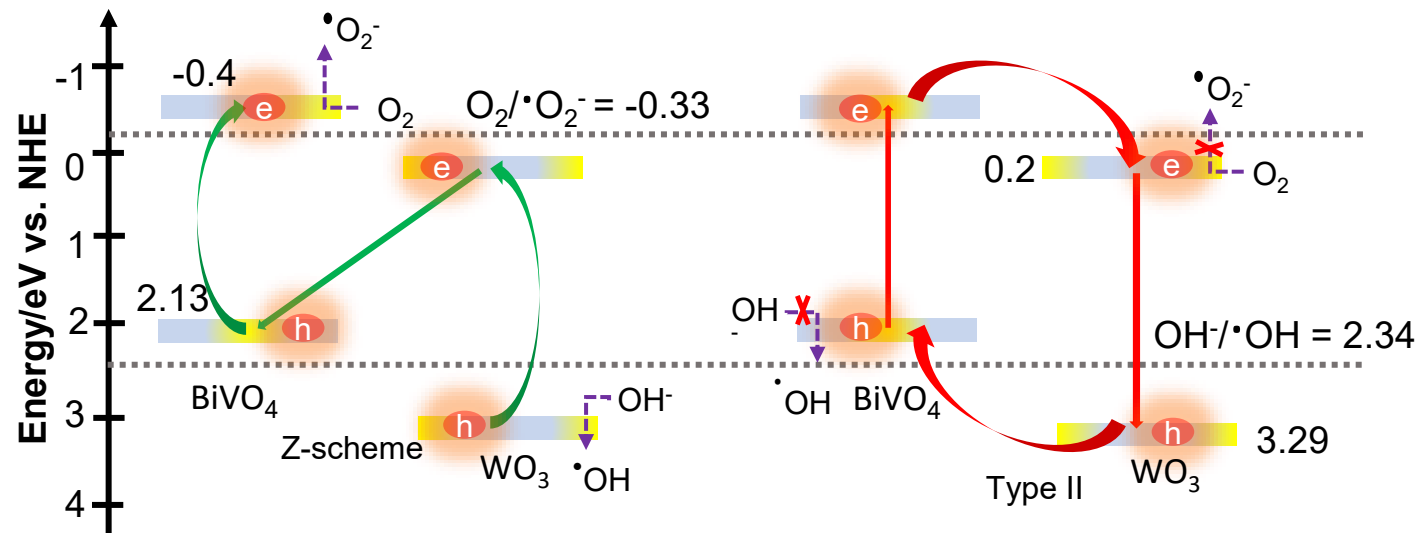
# Activity



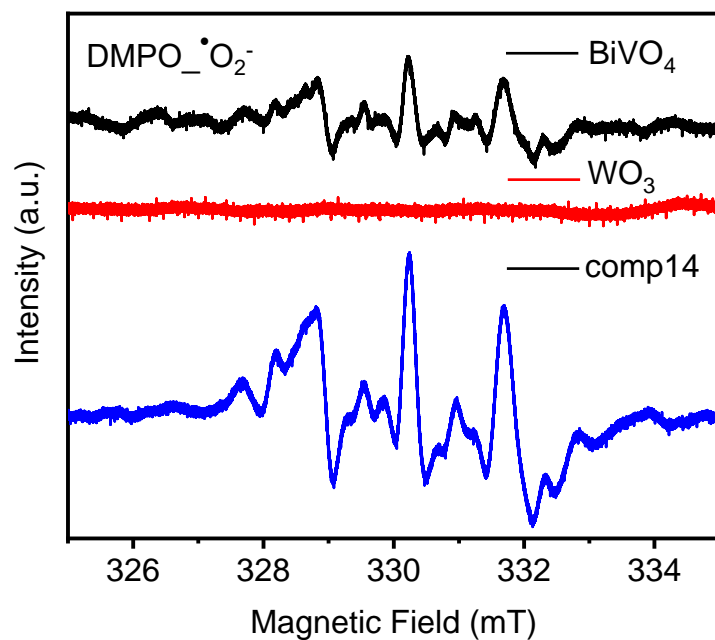
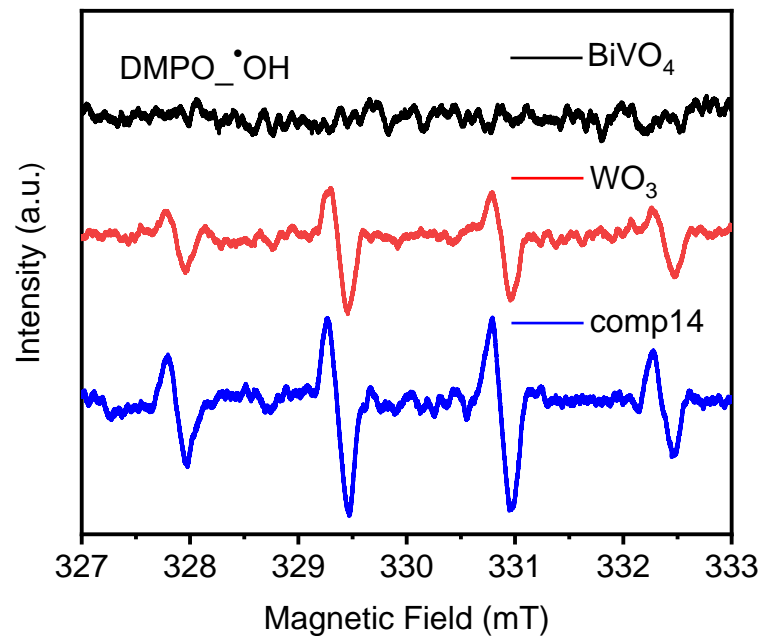
# Stability



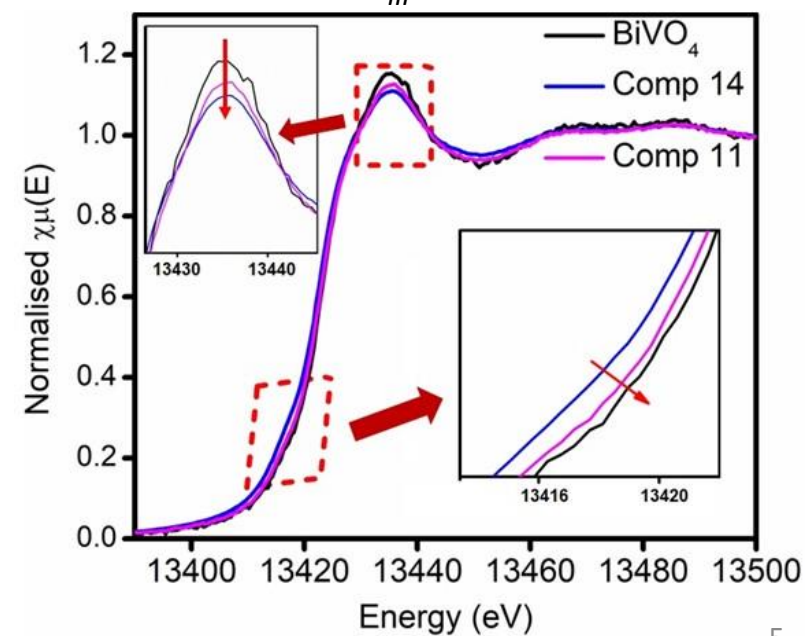
# Charge Transfer Mechanism



## EPR with DMPO

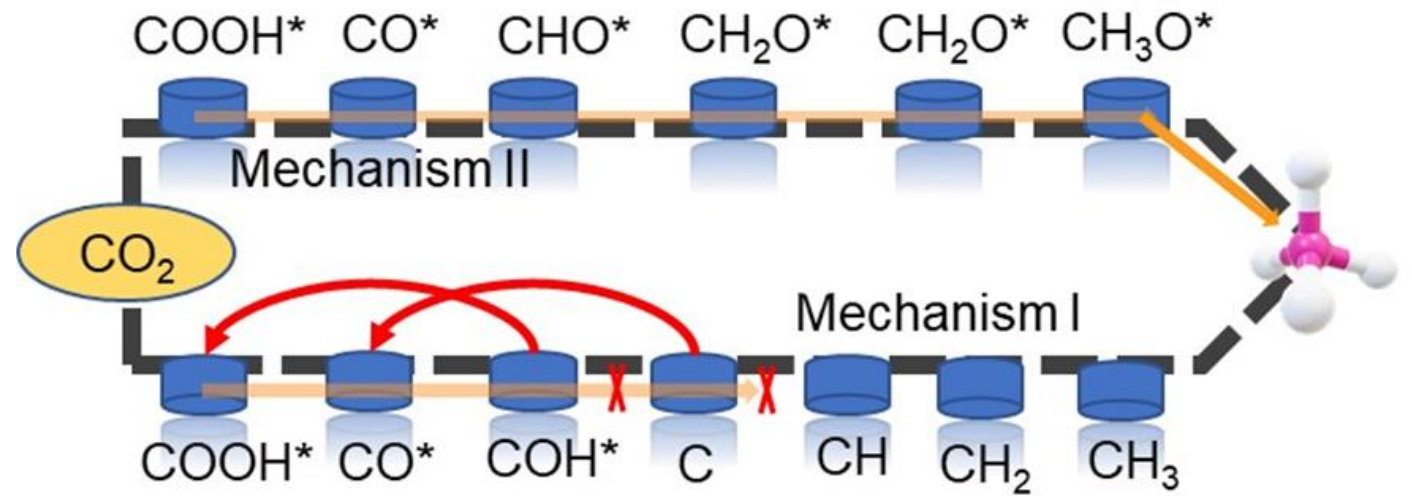
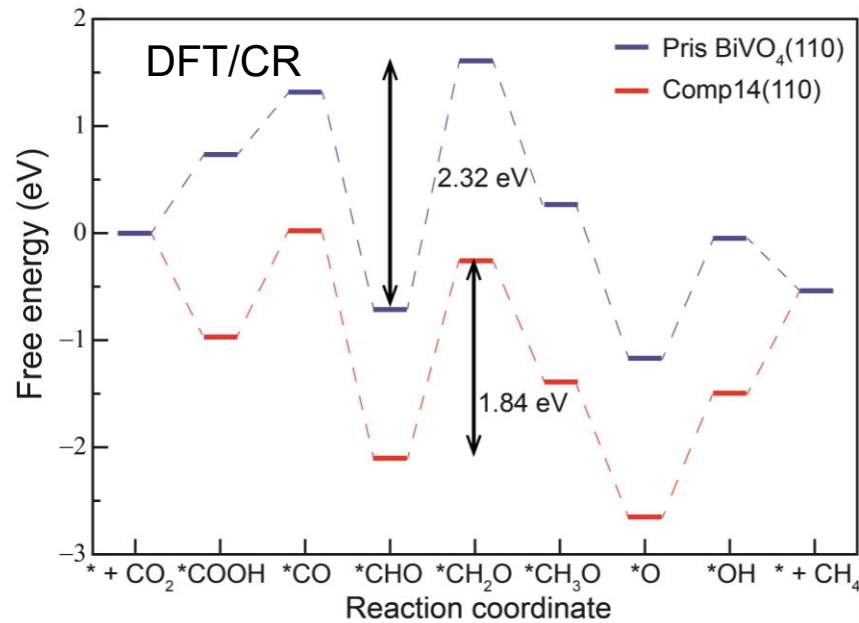
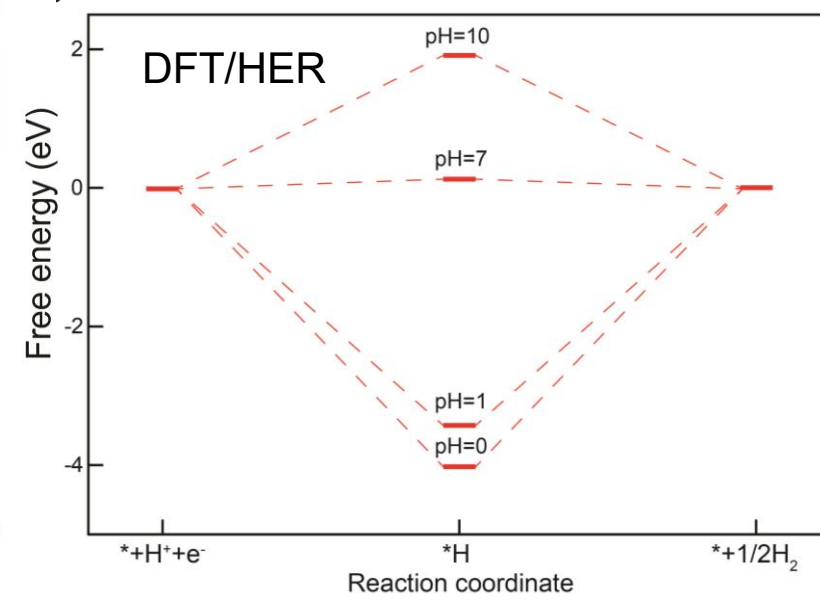
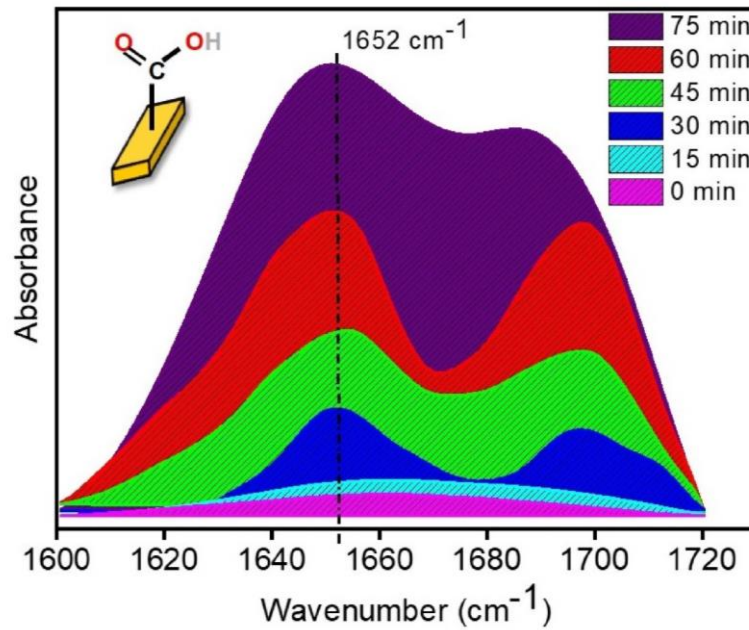
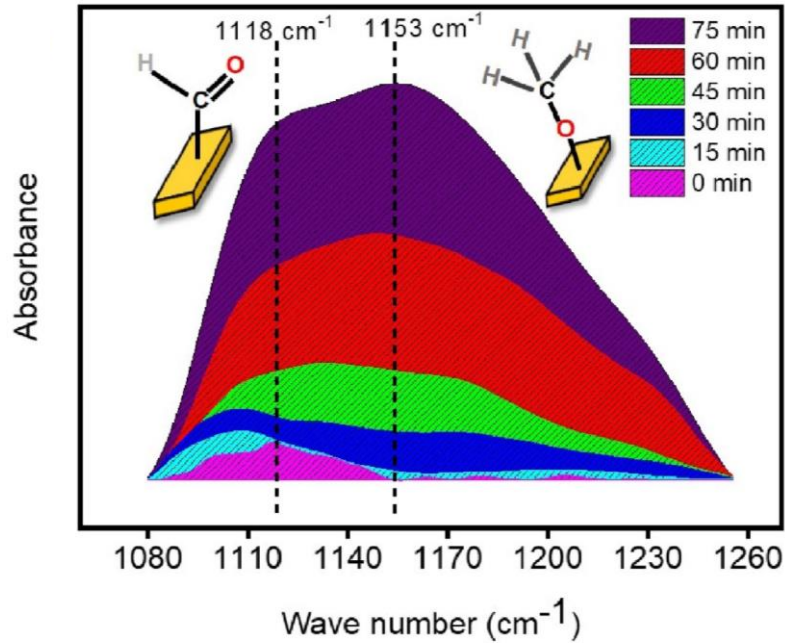


## Bi-L<sub>III</sub> XANES



# Mechanism

In-situ DRIFTS







## Acknowledgement

- ❖ Prof. S. C. Peter
- ❖ Prof. C. N. R. Rao
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- ❖ Petra-III Germany
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*Thank  
you*