# Article information:

Selective Deposition of Cobalt and Copper Oxides on BiVO4 Facets for Enhancement of CO2 Photocatalytic Reduction to Hydrocarbons - Yu - 2020 - ChemCatChem - Wiley Online Library  
<https://chemistry-europe.onlinelibrary.wiley.com/doi/10.1002/cctc.201901115>

# Article summary:

1. Carbon dioxide is a major greenhouse gas that causes global environmental problems, and its transformation into fuels is a promising method for simultaneous solution of energy and environmental problems.

2. Controlling the exposure of suitable crystal facets is an effective strategy to improve photocatalytic performance, and bismuth vanadate (BiVO4) is a promising visible light-driven semiconductor photocatalyst with low production cost, low toxicity, high stability and narrow band gap.

3. The photocatalytic efficiency of BiVO4 can be improved by selective photo-deposition of Cu and Co co-catalysts over different facets providing Z-scheme charge flow.

# Article rating:

May be slightly imbalanced: The article presents the information in a generally reliable way, but there are minor points of consideration that could be explored further or claims that are not fully backed by appropriate evidence. Some perspectives may also be omitted, and you are encouraged to use the research topics section to explore the topic further.

# Article analysis:

The article “Selective Deposition of Cobalt and Copper Oxides on BiVO4 Facets for Enhancement of CO2 Photocatalytic Reduction to Hydrocarbons” by Yu et al., published in ChemCatChem in 2020, provides an overview of the potential use of bismuth vanadate (BiVO4) as a visible light-driven semiconductor photocatalyst for the reduction of carbon dioxide into hydrocarbons. The authors discuss how controlling the exposure of suitable crystal facets can improve the photocatalytic performance, as well as how selective photo-deposition of Cu and Co co-catalysts over different facets can provide Z-scheme charge flow to further enhance the efficiency.

The article appears to be reliable overall; it provides evidence for its claims in the form of references to previous research studies, which are cited throughout the text. Furthermore, it presents both sides equally by discussing both advantages and disadvantages associated with using BiVO4 as a photocatalyst for CO2 reduction. However, there are some points that could have been explored more thoroughly or presented more clearly; for example, while the authors mention that controlling the exposure of suitable crystal facets can improve photocatalytic performance, they do not provide any specific examples or evidence to support this claim. Additionally, while they discuss how selective photo-deposition can provide Z-scheme charge flow to enhance efficiency, they do not explain what this means or why it is beneficial in detail.

In conclusion, while this article provides an overview on using BiVO4 as a visible light-driven semiconductor photocatalyst for CO2 reduction into hydrocarbons, there are some areas where more information could have been provided or explored further in order to make it more comprehensive and informative.

# Topics for further research:

* Z-scheme charge flow
* Photocatalytic CO2 reduction
* Visible light-driven semiconductor photocatalyst
* Selective photo-deposition of Cu and Co co-catalysts
* Crystal facet exposure control
* Hydrocarbon production from CO2

# Report location:

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