# Article information:

Spectrokinetic Investigation of Reverse Water-Gas-Shift Reaction Intermediates over a Pt/CeO2 Catalyst | The Journal of Physical Chemistry B  
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# Article summary:

1. This article discusses the use of infrared (IR) spectroscopy and reaction rates to study catalytic mechanisms in reverse water-gas-shift reactions (RWGS) over a platinum-ceria catalyst.

2. Two main reaction mechanisms have been proposed for the WGS reaction over ceria-based materials: a redox mechanism and a nonredox mechanism.

3. The authors demonstrate the simultaneous combination of IR + MS analyses under SSITKA conditions using a single reactor as a powerful and straightforward means to provide information on catalytic mechanisms.

# Article rating:

Appears well balanced: The article presents the information in a reliable and balanced way, without biases and prejudices. The claims made in the article are well supported and, where applicable, all sides of the argument are given opportunity to present their point of view. The article appears trustworthy and reliable.

# Article analysis:

The article is generally well written and provides an in depth discussion of the use of infrared (IR) spectroscopy and reaction rates to study catalytic mechanisms in reverse water-gas-shift reactions (RWGS) over a platinum-ceria catalyst. The authors provide evidence for two main reaction mechanisms that have been proposed for the WGS reaction over ceria-based materials, namely a redox mechanism and a nonredox mechanism, as well as demonstrating the simultaneous combination of IR + MS analyses under SSITKA conditions using a single reactor as a powerful and straightforward means to provide information on catalytic mechanisms.

The article does not appear to be biased or one sided, presenting both sides equally with evidence for each side provided. It also does not appear to contain any promotional content or partiality towards either side of the argument presented. All potential risks are noted, such as the fact that different species could be important for the forward water gas shift reaction because the nature of the surface of the catalyst will depend on the composition of the reaction mixture, which is something that will be explored in future work.

The only potential issue with this article is that it does not explore any counterarguments or missing points of consideration regarding its claims made, nor does it present any missing evidence for these claims made. However, this is likely due to space constraints rather than any intentional omission by the authors, so this should not detract from its overall trustworthiness and reliability.

# Topics for further research:

* Reverse water-gas-shift reaction mechanism
* Platinum-ceria catalyst reaction rate
* Infrared spectroscopy catalytic mechanism
* Simultaneous spectroscopy and mass spectrometry
* Redox and nonredox reaction mechanisms
* Surface of catalyst composition effects

# Report location:

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