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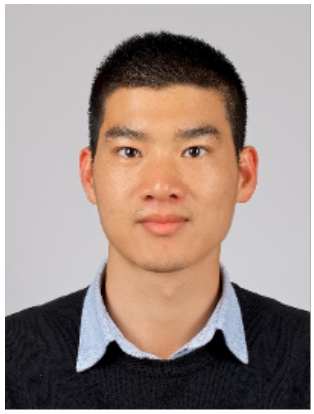
UNDERSTANDING THE REACTION MECHANISM OF LIGNIN MODEL COMPOUNDS DURING CATALYTIC PYROLYSIS

Zeyou Pan

The van Bokhoven Group / Reaction dynamic Group at Paul Scherrer Institute
Supervisor: Prof. Dr. Jeroen A. van Bokhoven
Co-examiners: Dr. Patrick Hemberger and Prof. Dr. Christoph Bostedt



07/03/2023, 9 am, Paul Scherrer Institute OFLG/402 and on Zoom (https://ethz.zoom.us/j/64576007382)

Project Summary: During combustion of fossil fuels, CO2 is released and accumulated in the atmosphere, thereby exacerbating the global warming effect. Replacing fossil fuels to reduce CO2 emissions is increasingly urgent and biomass as a sustainable and renewable resource is an ideal alternative feedstock. Lignin, as one of the three main components of biomass, rich in aromatic units can be converted to fuels and chemicals. Due to the molecular-structure complexity and amorphousness, however, the reaction mechanism of lignin decomposition is complex, which makes the product-selectivity control very challenging. Model compounds containing partial lignin units and/or linkages are employed to disentangle the reaction mechanism. In this work, catalytic pyrolysis of different lignin model compounds is investigated using photoelectron photoion coincidence spectroscopy at Swiss Light Source, aiming to unveil the reaction mechanism of lignin. We propose reaction pathways of different lignin model compounds and summarize general rules towards lignin.

CV: Since 2019, Zeyou Pan joined the reaction dynamic group at Paul Scherrer Institute and the van Bokhoven group at ETH Zürich, pursuing a doctorate thesis under the supervision of Dr. Patrick Hemberger and Prof. Jeroen A. van Bokhoven.