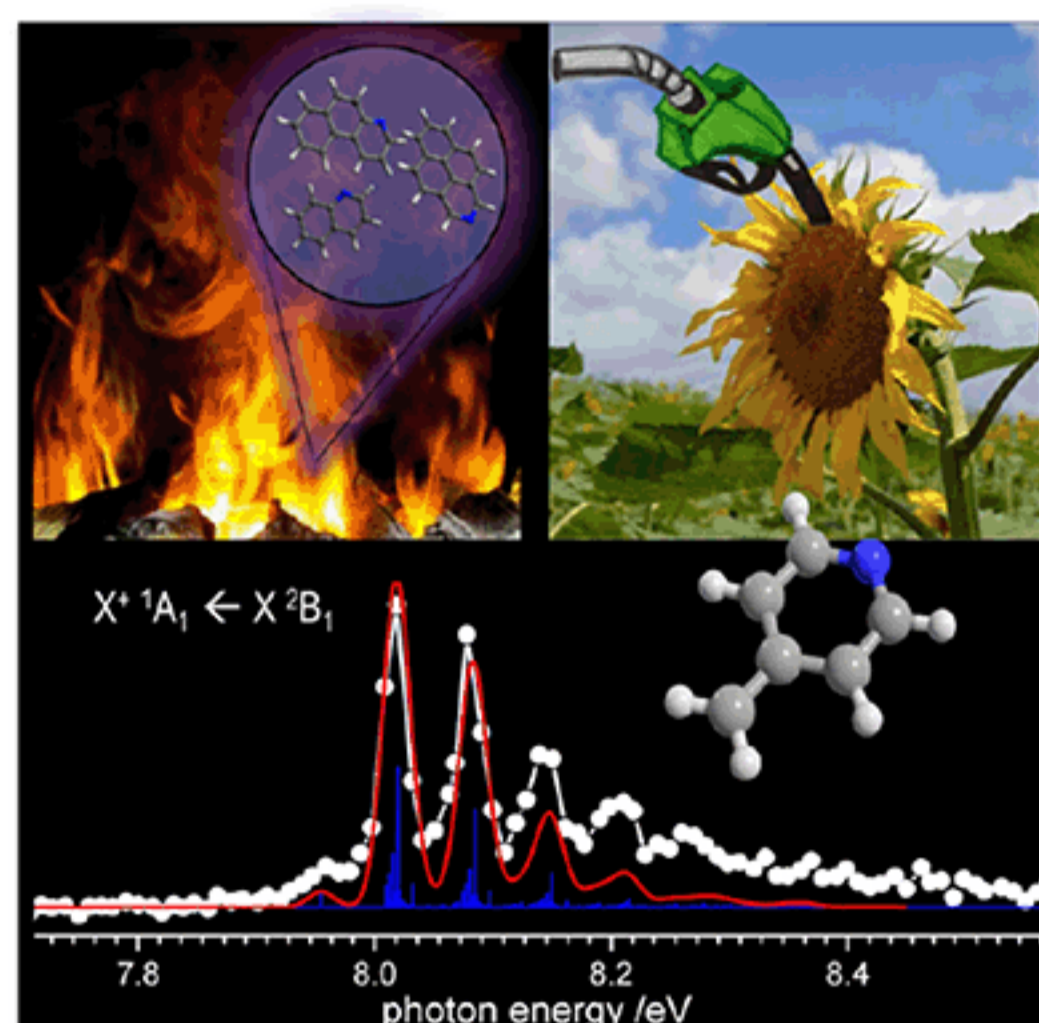


## Swiss Light Source Research Highlights

### Isomer-Selective Generation and Spectroscopic Characterization of Biofuel Intermediates

Engelbert Reusch, Fabian Holzmeier, Philipp Constantinidis, Patrick Hemberger and Ingo Fischer

*Angewandte Chemie*, 16 May 2017, DOI: [10.1002/anie.201703433](https://doi.org/10.1002/anie.201703433)

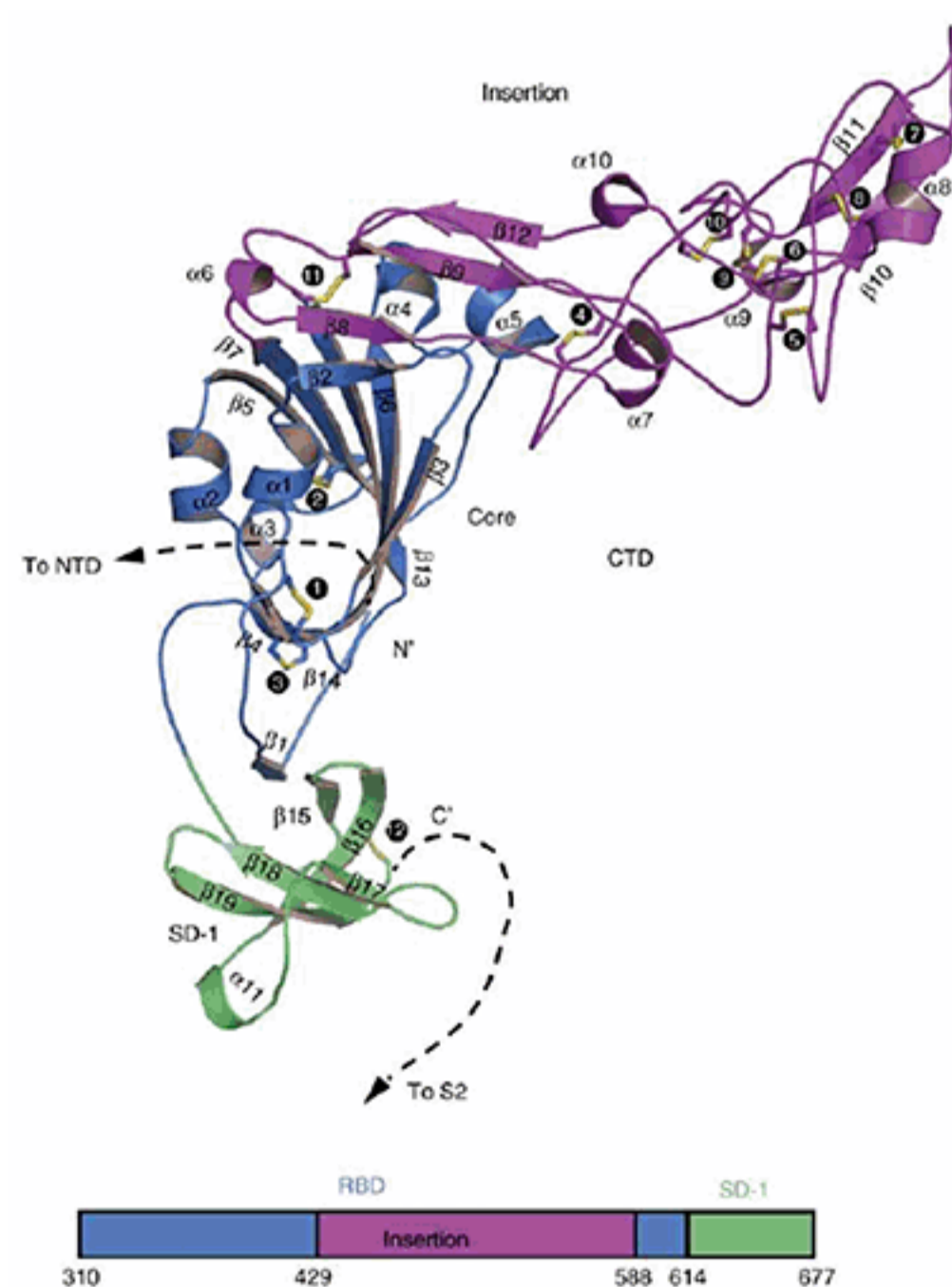


Online combustion analysis relies heavily on spectral data to detect reactive intermediates isomer-selectively to establish e.g. kinetic flame models. Due to the difficulty to generate these species cleanly, spectral data are rather scarce. Here we report on the selective generation of three picolyl radical isomers ( $C_5H_4N-CH_2^*$ ) by deamination of aminomethylpyridines. Picolyl radicals are relevant in biofuel combustion, and could now be characterized by threshold photoelectron spectroscopy using synchrotron radiation. Vibrationally resolved bands and distinct ionization energies allow for isomer-specific detection of these

elusive species in complex environments and permit us to explore new avenues in soot- and NO<sub>x</sub> formation kinetics. Read more: <https://www.psi.ch/sls/scientific-highlights-and-news>

### Towards understanding of human betacoronavirus HKU1 life cycle

*Crystal Structure of the Receptor Binding Domain of the Spike Glycoprotein of Human Betacoronavirus HKU1* Ou X, Guan H, Qin B, Mu Z, Wojdyla J, Wang M, Dominguez SR, Qian Z, Cui S, *Nature Communications*, 8:15216, 2017, DOI: [10.1038/ncomms15216](https://doi.org/10.1038/ncomms15216)



Researchers from China and USA join forces with Swiss Light Source (SLS) macromolecular crystallography (MX) beamline scientists in a study, which aims at understanding an important step in the life cycle of the human betacoronavirus HKU1. Coronaviruses are positive single-stranded RNA viruses, which cause significant percentage of acute respiratory illnesses in humans. In recent years SARS and MERS were responsible for two pandemics of deadly pneumonia. Currently, there is no vaccines or specific antiviral treatment available against coronaviruses. Structural characterization of proteins essential in virus life cycle provides valid functional information and is basis for structure-based drug design. Recent publication on human coronavirus HKU1 including structure determination of the protein S1, which

binds to yet unknown human receptor and initiates virus entry into host, brings possibility of finding effective treatment against coronavirus closer.

Read more: <https://www.psi.ch/sls/scientific-highlights-and-news>