

# Photodesorption Dynamics of CO from Si(100) Revealed by Time-of-Flight Mass Spectrometry

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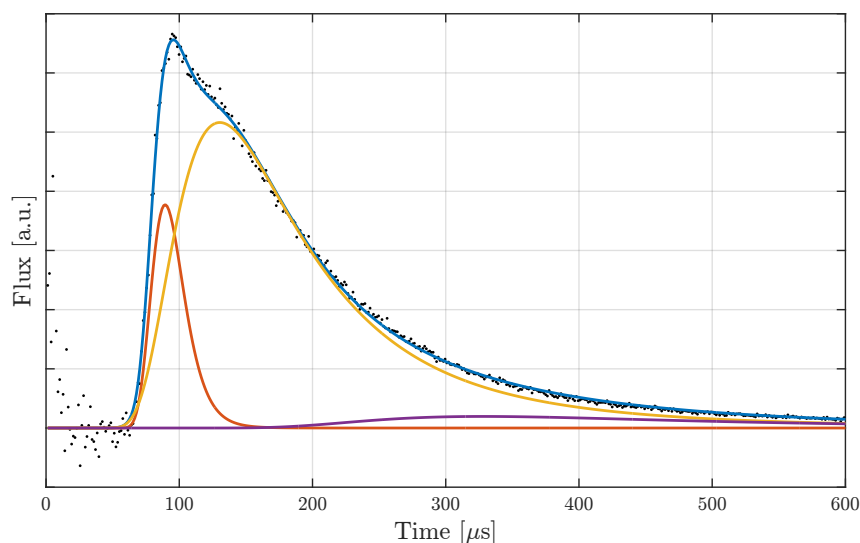
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Velocity distributions of desorbed molecules can provide substantial insights into their desorption dynamics as Zimmermann et al. showed in several studies. [1,2]

CO adsorbed on Si(100) is desorbed by a pulsed UV laser (266/355 nm) and detected with a mass spectrometer. This yields velocity distributions as well as cross sections, which both allow us to gain information about the dynamics of the desorption process.

Both, the velocity distributions and the cross section measurements show at least two distinct desorption channels, which - as we can show - are surprisingly not interconnected. Furthermore we are trying to investigate the effect of additional IR radiation to vibrationally excite the adsorbate prior to photodesorption. Consequently we expect a change in channel decomposition.



*Time-of-Flight spectrum including fits for different desorption channels. The narrow and steep red channel cannot be described by a simple Boltzmann fit. Therefore we postulate an additional energy transfer process.*

## References:

[1] F. Zimmermann, W. Ho, Surface Science Reports **22**, 127-247 (1995).

[2] F. Zimmermann, W. Ho, J. Chem. Phys. **100**, 7700 (1994).