

Supporting Information

**Methanol oxidation on Au(332):
An isothermal pulsed molecular beam study**

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Supplementary Figures

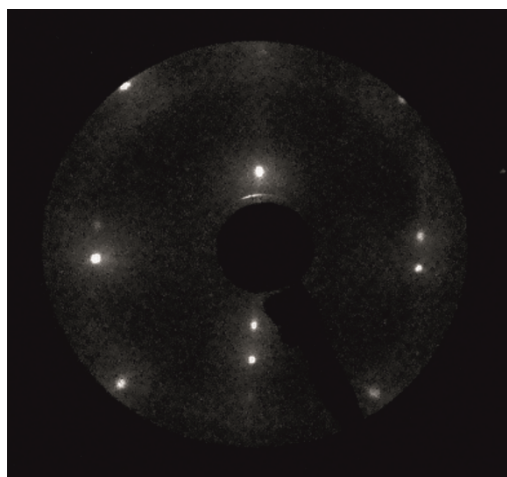


Figure S1. LEED measurement of clean Au(332) surface.

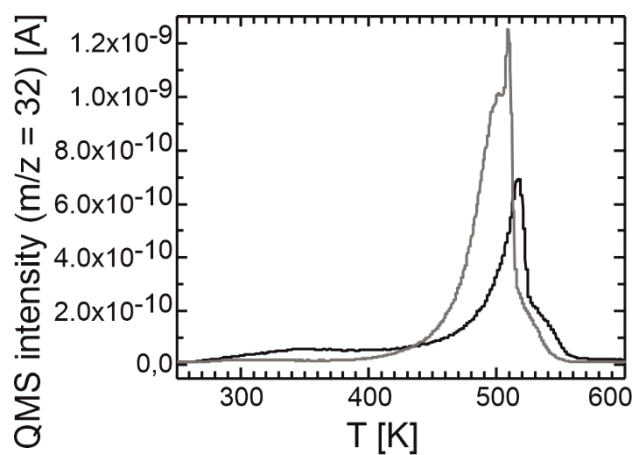


Figure S2. O₂ desorption from Au(332) after exposure to activated oxygen ($0.4 \times 10^{13} \text{ s}^{-1} \text{ cm}^{-2}$) for 3000 s of the clean Au(332) surface (grey) corresponding to saturation coverage and for 725 s of the surface covered with formate after a pulsed isothermal methanol oxidation molecular beam experiment (black). Based on a calibration series, which was conducted with a slightly modified experimental setup preventing direct comparison of the absolute intensities, (80-85) % of the saturation coverage are expected to be reached after 700 s of oxygen exposure onto the clean Au(332) surface.

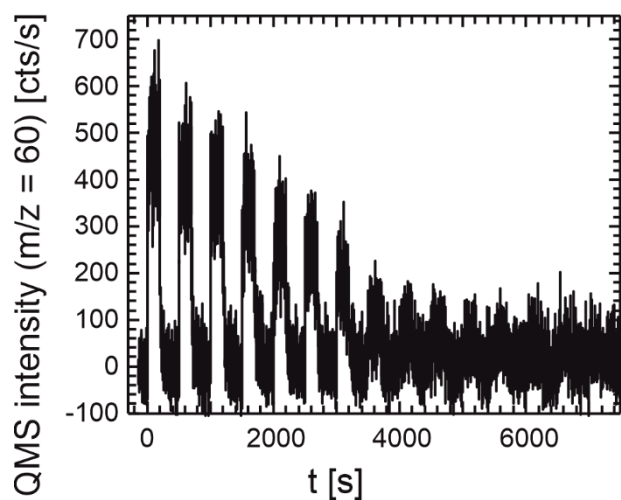


Figure S3. Methyl formate formation rate ($m/z = 60$) of pulsed, isothermal MB experiment on the methanol oxidation at 230 K on Au(332) for a prolonged pulse sequence (15 pulses) by applying a constant flux of methanol (1.6×10^{-7} mbar, 4.2×10^{13} $s^{-1}cm^{-2}$) and pulsing (200 s on, 300 s off) atomic oxygen (2.6×10^{-3} ML/s, 0.4×10^{13} $s^{-1}cm^{-2}$, approx. 0.5 ML per pulse) onto the surface.