Supplementary Material for PCCP

Supplementary Information

KINETICS OF ADSORPTION OF CARBOXYLIC ACIDS ONTO TITANIUM DIOXIDE

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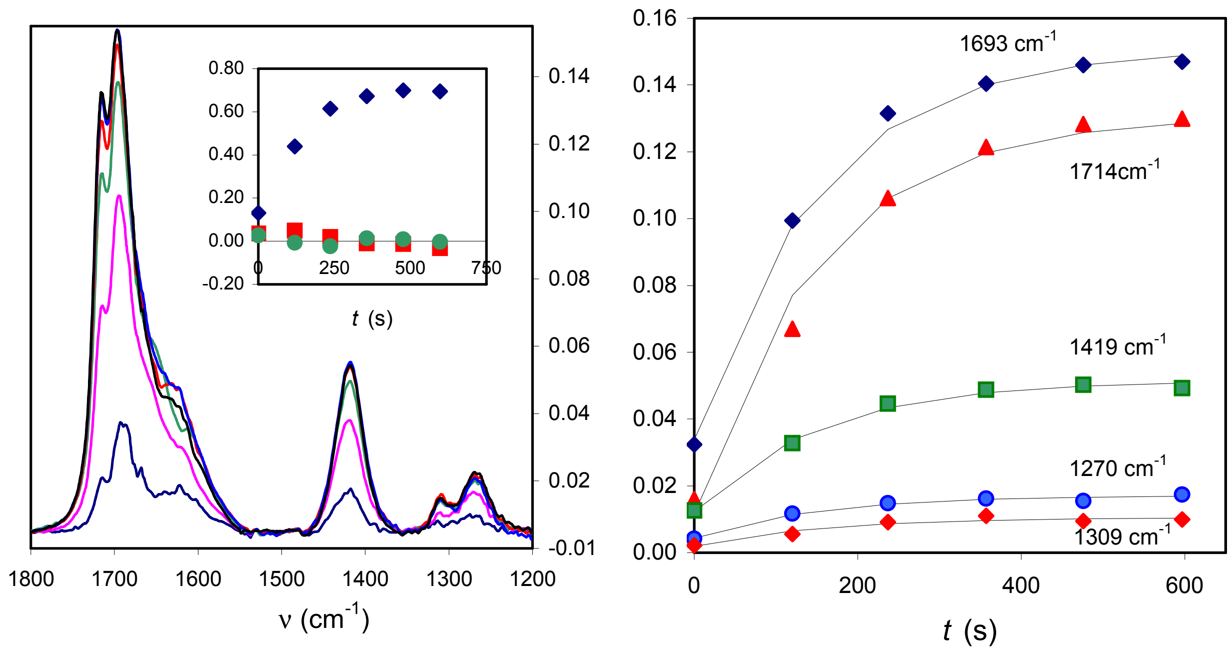
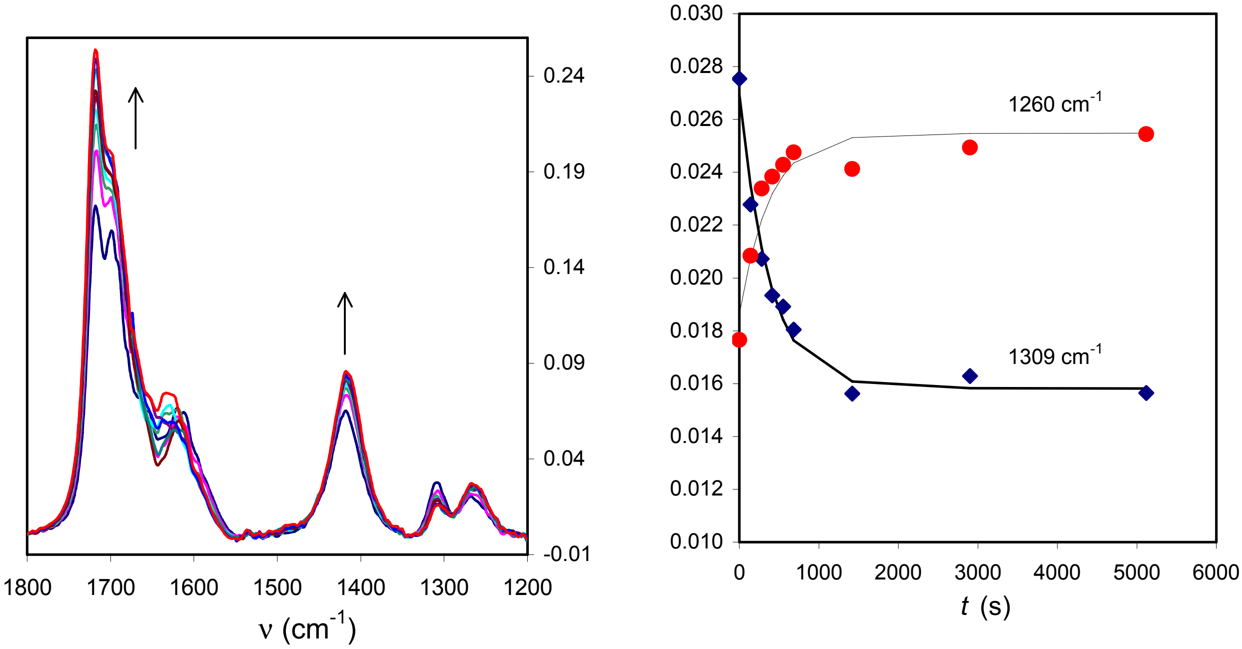
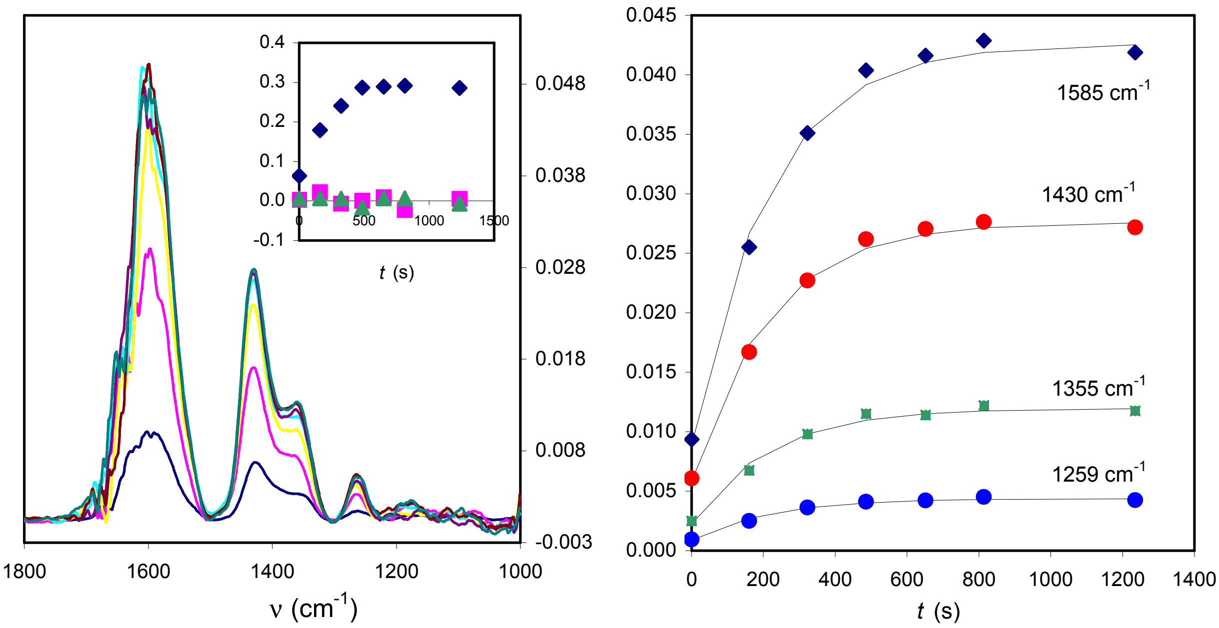


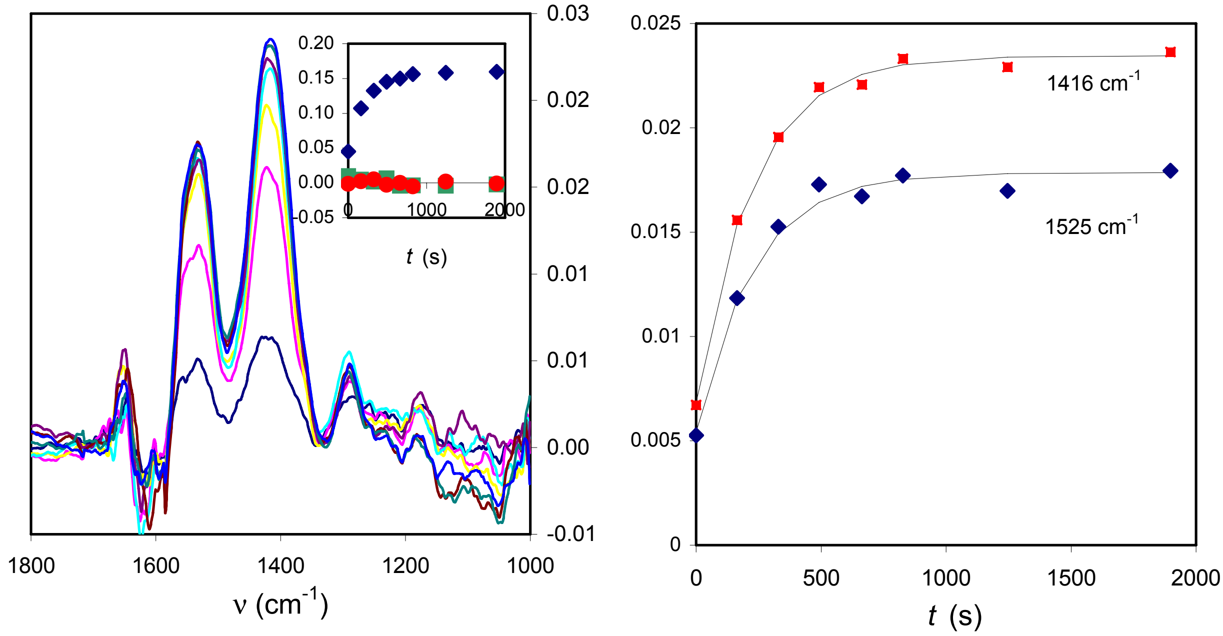
Figure SI 1: Left: IR spectral changes during de adsorption of oxalic acid on a TiO_2 film. **Inset**: contribution of the eigenvectors to the spectra at each time. **Right:** spectral traces at selected wavenumbers. $k_{obs} = 6.5 \pm 0.4 \times 10^{-3}$ s $^{-1}$. Concentration: 1.75×10^{-5} M. pH, 4.0, T 25.0 °C, I 0.01 M (NaCl).



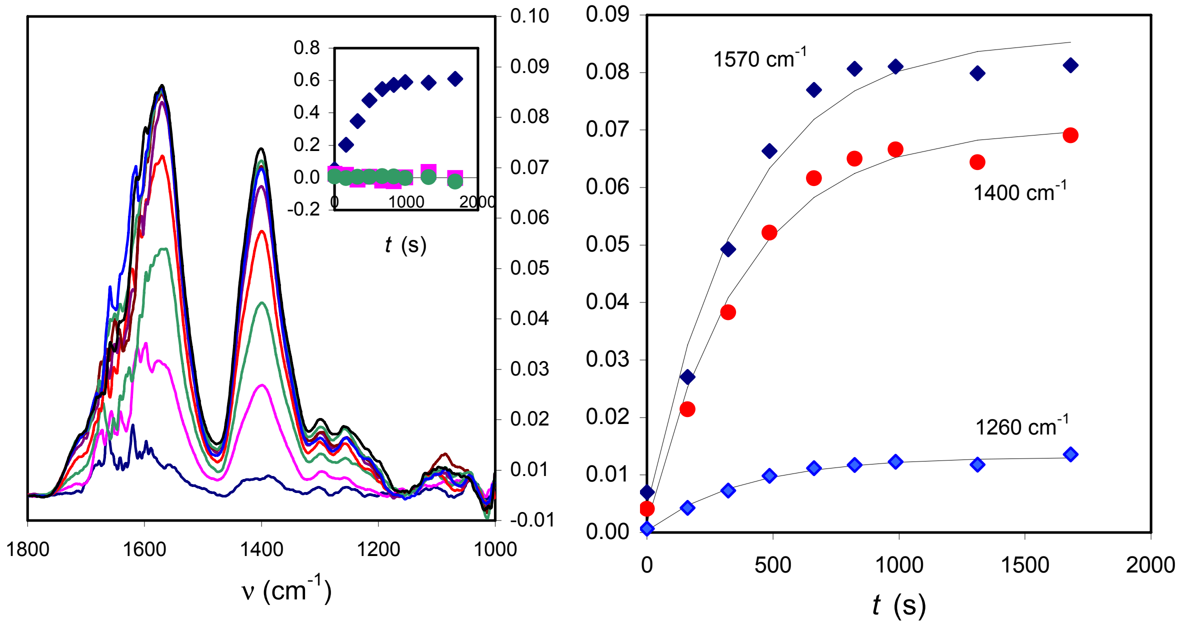
Figures SI 2: **Left**: IR spectral changes during de adsorption of oxalic acid on a TiO_2 film. **Right:** spectral traces at selected wavenumbers. $k_{obs} = 2.6 \pm 0.4 \times 10^{-3}$ s $^{-1}$. Concentration: 1.0×10^{-3} M. pH, 4.0, T 25.0 °C. Note that the primary adsorption process was not recorded.



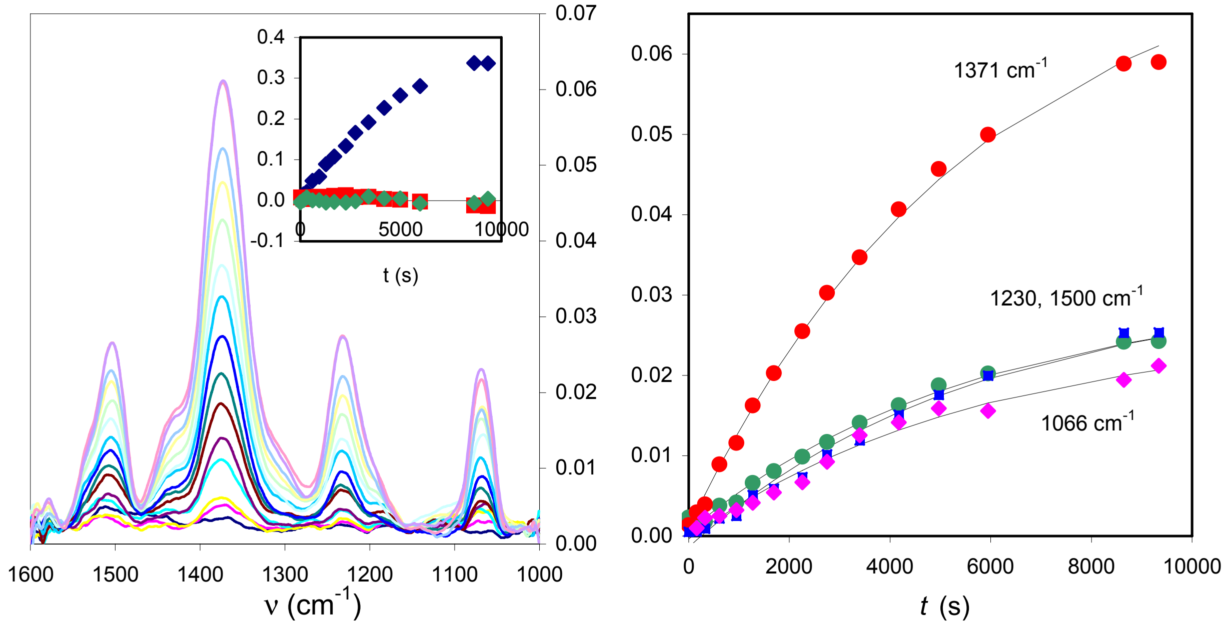
Figures SI 3: **Left**: IR spectral changes during de adsorption of malonic acid on a TiO_2 film. **Inset**: contribution of the eigenvectors to the spectra at each time. **Right:** spectral traces at selected wavenumbers. $k_{obs} = 5.3 \pm 0.8 \times 10^{-3}$ s $^{-1}$. Concentration: 1.39×10^{-5} M. pH, 4.0, T 25.0 °C. I 0.01 M (NaCl).



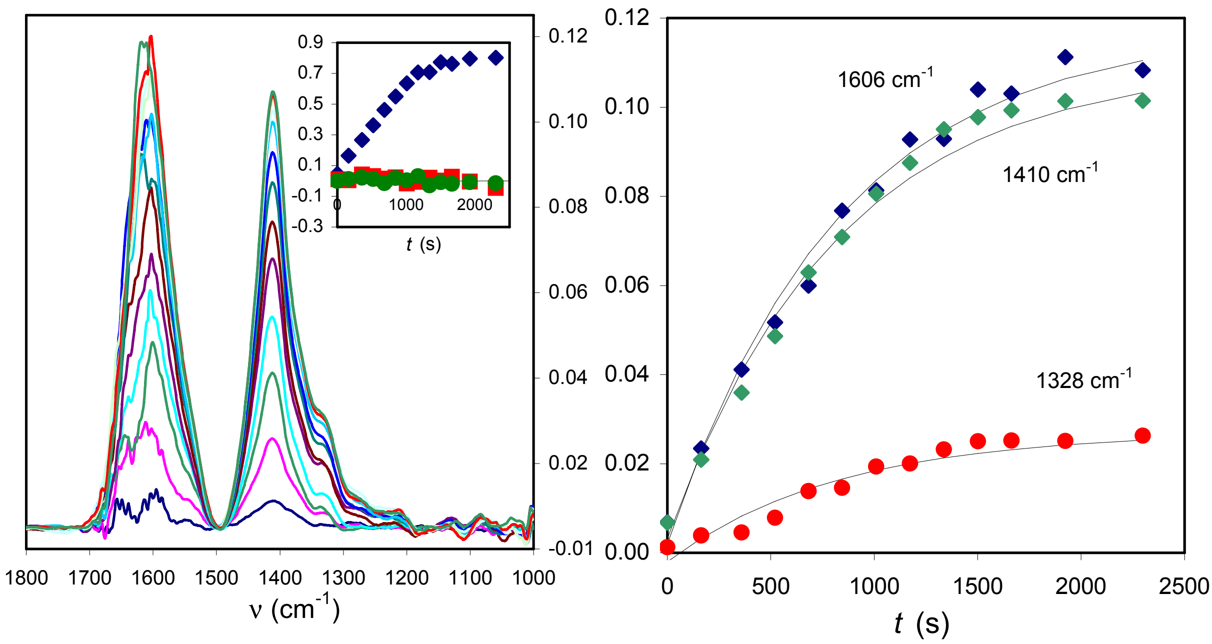
Figures SI 4: **Left**: IR spectral changes during de adsorption of succinic acid on a TiO_2 film. **Right:** spectral traces at selected wavenumbers. **Inset**: contribution of the eigenvectors to the spectra at each time. $k_{obs} = 4.3 \pm 0.6 \times 10^{-3}$ s^{-1}. Concentration: 1.16×10^{-5} M. pH, 4.0, T 25.0 °C. I 0.01 M (NaCl).



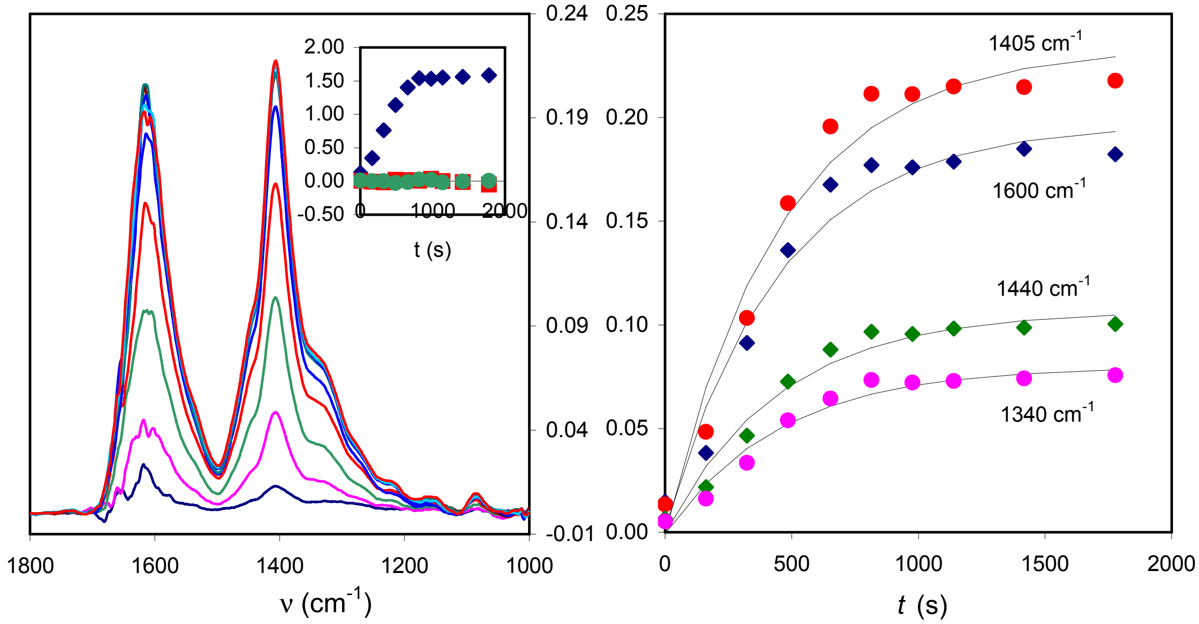
Figures SI 5: **Left**: IR spectral changes during de adsorption of citric acid on a TiO_2 film. **Inset**: contribution of the eigenvectors to the spectra at each time. **Right:** spectral traces at selected wavenumbers. $k_{obs} = 3.1 \pm 0.5 \times 10^{-3}$ s^{-1}. Concentration: 1.08×10^{-5} M. pH, 4.0, T 25.0 °C. I 0.01 M (NaCl).



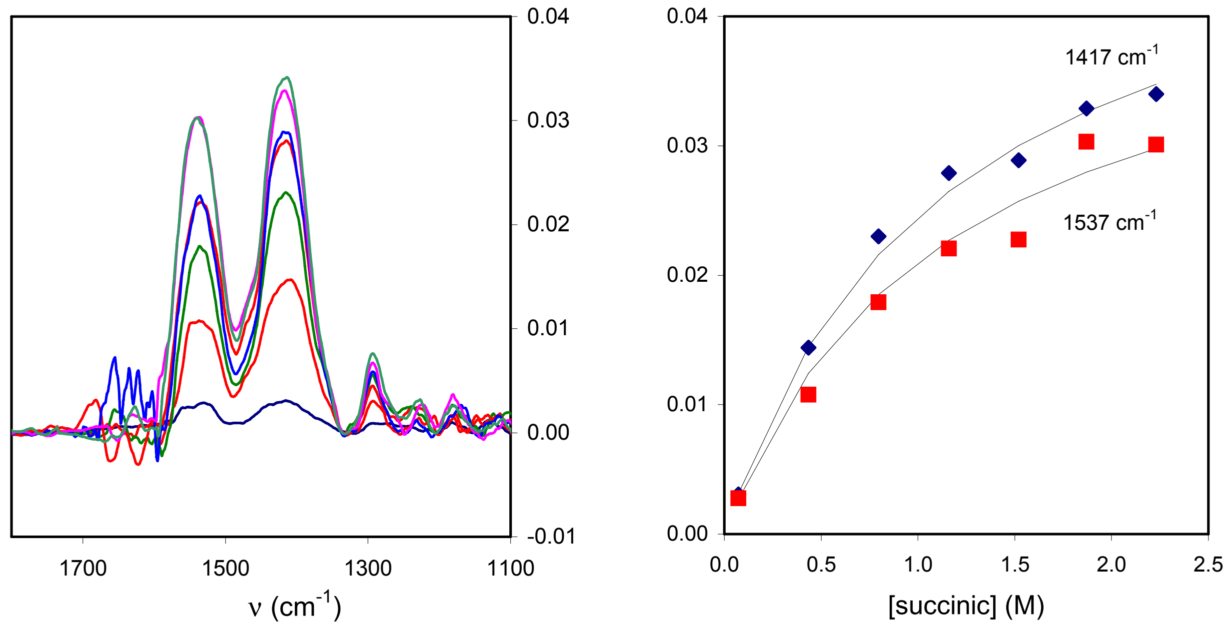
Figures SI 6: **Left**: IR spectral changes during de adsorption of gallic acid on a TiO_2 film. **Inset**: contribution of the eigenvectors to the spectra at each time. **Right:** spectral traces at selected wavenumbers. $k_{obs} = 2.0 \pm 0.2 \times 10^{-4}$ s^{-1}. Concentration: 6.66×10^{-7} M. pH, 4.0, T 25.0 °C. I 0.01 M (NaCl).



Figures SI 7: **Left**: IR spectral changes during de adsorption of EDTA on a TiO_2 film. **Inset**: contribution of the eigenvectors to the spectra at each time. **Right:** spectral traces at selected wavenumbers. $k_{obs} = 1.9 \pm 0.6 \times 10^{-3}$ s^{-1}. Concentration: 7.42×10^{-6} M. pH, 4.0, T 25.0 °C. I 0.01 M (NaCl).



Figures SI 8: **Left**: IR spectral changes during de adsorption of TTHA on a TiO_2 film. **Inset**: contribution of the eigenvectors to the spectra at each time. **Right:** spectral traces at selected wavenumbers. $k_{obs} = 2.2 \pm 0.3 \times 10^{-3}$ s $^{-1}$. Concentration: 1.70×10^{-5} M. pH, 4.0, T 25.0 °C. I 0.01 M (NaCl).



Figures SI 9: **Left:** spectra of succinic acid at different concentrations in equilibrium with a a TiO_2 film. Concentrations: $6 \times 10^{-7} - 2 \times 10^{-5}$ M, pH, 4.0, T 25.0 °C. I 0.01 M (NaCl). **Right:** absorbance values at 1417 cm^{-1} and 1537 cm^{-1} vs. concentration. Solid line fitted with a Langmuir equation, K_L $1.0 \pm 0.5 \times 10^5$ M^{-1}, R^2 0.992 and 0.971 respectively.