



S3 Figure. EDX peak assignment, performed by the Bruker Esprit software supplied with the Bruker Quantax detector, based on its spectral library. **Left:** averaged over a $2 \times 2 \text{ } (\mu\text{m})^2$ area of original Ag/AgCl patch covered with EPS such as seen on the right bottom of Fig. 4c-e. **Right:** averaged over a $0.8 \times 0.8 \text{ } (\mu\text{m})^2$ area of a *Shewanella* bacterium lying directly on the glass support. Both acquired on a sample fixed 7 days after sealing the setup.