

**Charging of Ionic Liquid Surfaces Under X-ray Irradiation:
The Measurement of Absolute Binding Energies by XPS.**

Supplementary information

*Ignacio J. Villar-Garcia, Emily F. Smith, Alasdair W. Taylor, Fulian Qiu,
Kevin R. J. Lovelock, Robert G. Jones and Peter Licence**

School of Chemistry, The University of Nottingham, Nottingham NG7 2RD, UK

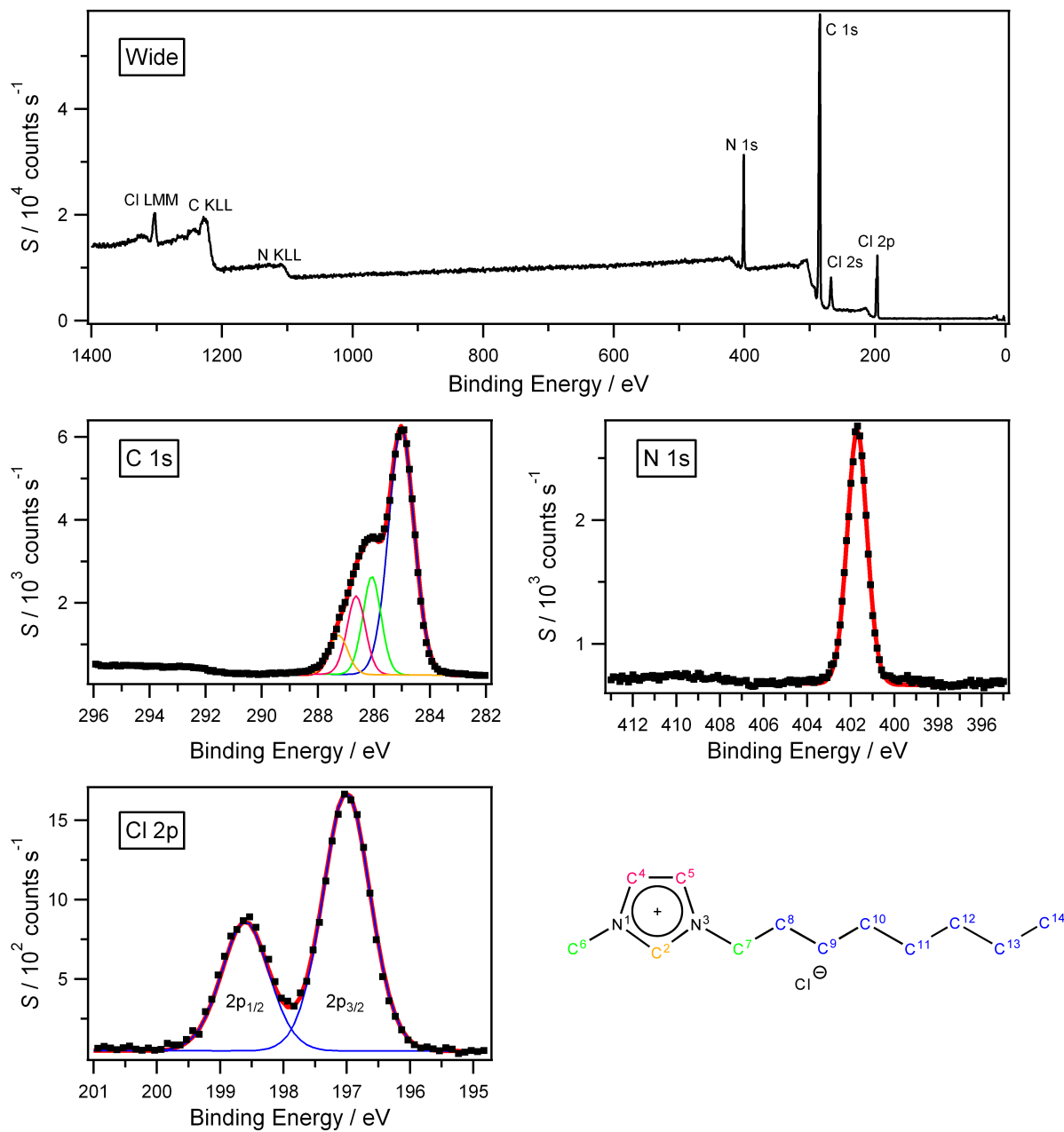
**To whom correspondence should be addressed:*

[*peter.licence@nottingham.ac.uk*](mailto:peter.licence@nottingham.ac.uk)

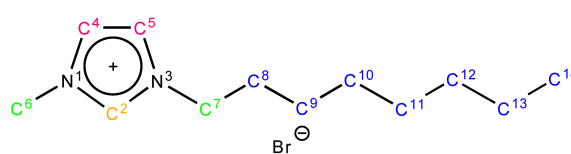
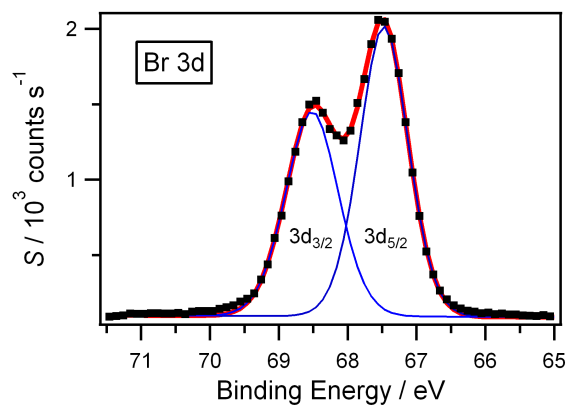
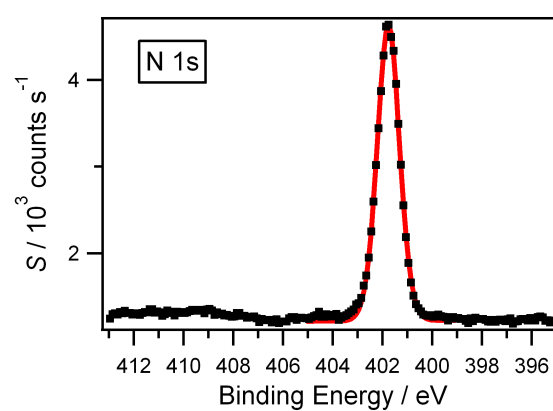
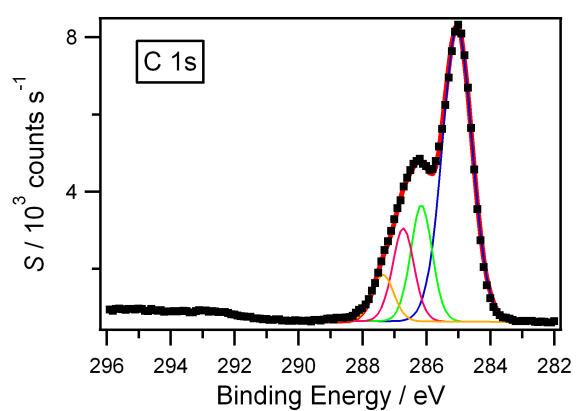
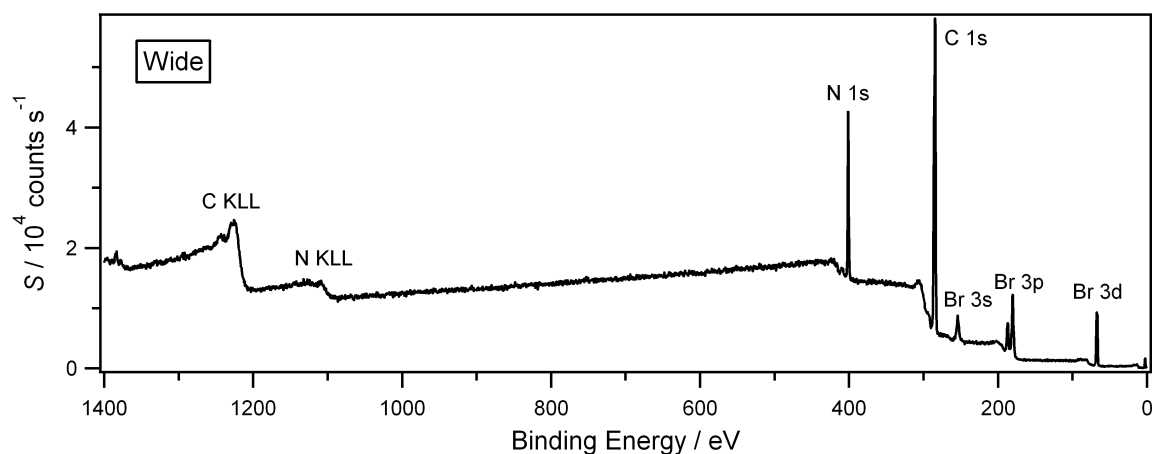
Tel: +44 115 8466176

Figure S1. Wide and fitted high resolution scans of all [C₈C₁Im][X] studied. C 1s high resolution scans were fitted using the model described in the paper (Figure 8). All modelled components in F 1s, O 1s, N 1s and B 1s high resolution scans were fitted assuming equal FWHM. P 2p and S 2p high resolution scans were fitted taking into account spin orbit coupling splittings of 0.84 eV for P 2p, 1.18 eV for S 2p, 1.60 eV for Cl 2p and 1.05 eV for Br 3d.¹ The p_{1/2}:p_{3/2} ratio was set to 1:2, the d_{3/2}:d_{5/2} ratio was set to 2:3, the FWHM in both cases was set to 1:1 for each contribution.² For N 1s high resolution scans, the N_{cation} signal is affected by the shake up/off phenomena and was fitted with a 12% intensity loss with respect to other peaks.³

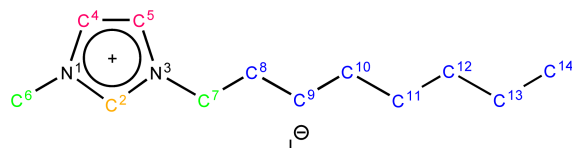
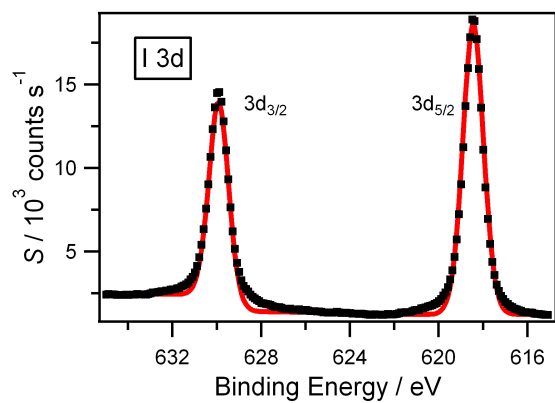
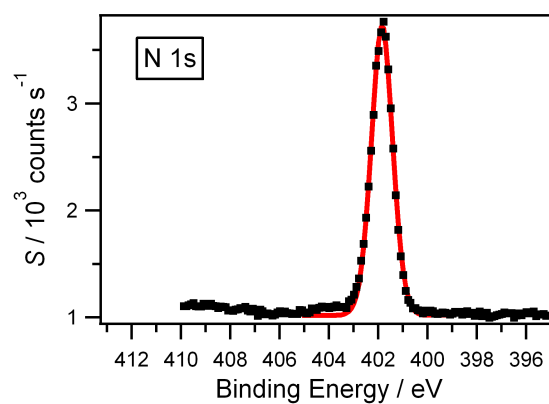
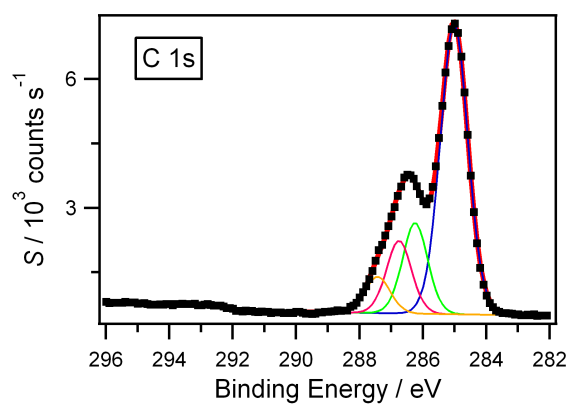
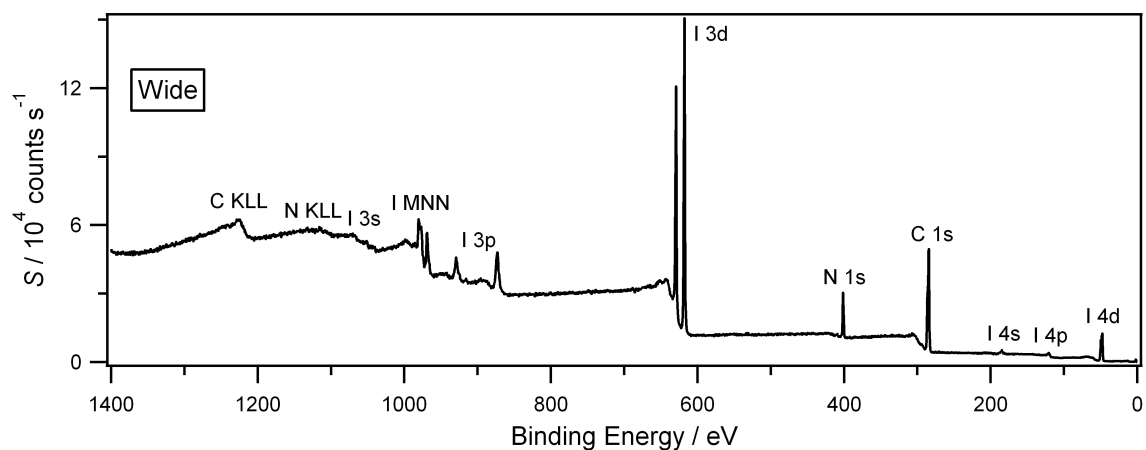
S1.1 [C₈C₁Im]Cl wide and high resolution scans.



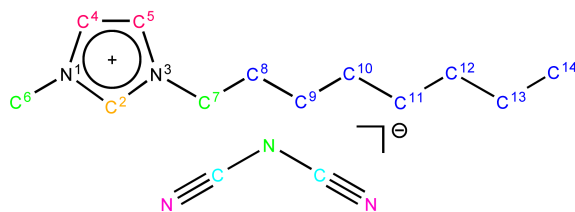
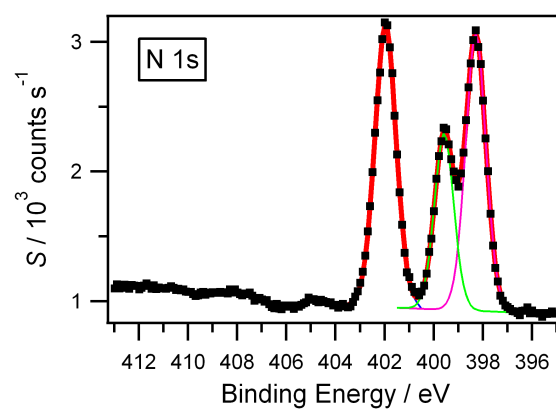
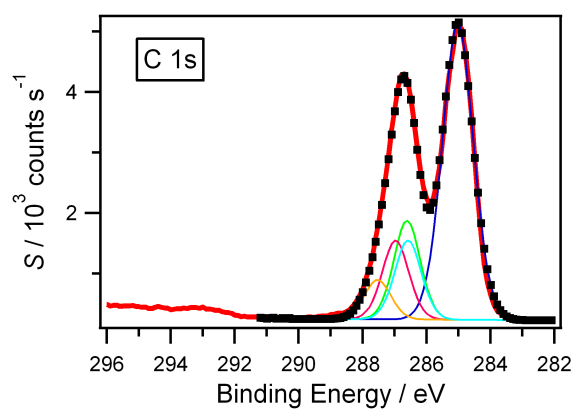
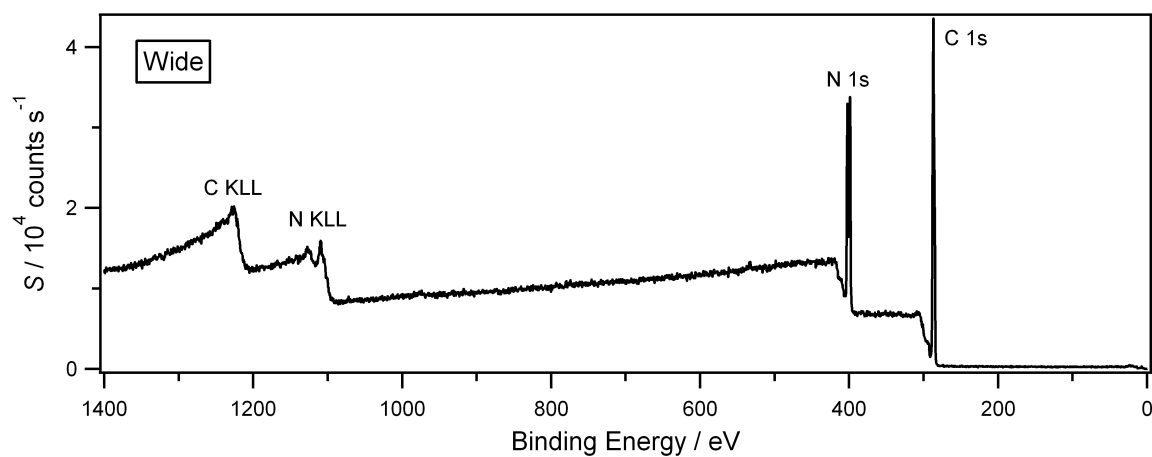
S1.2 [C₈C₁Im]Br wide and high resolution scans.



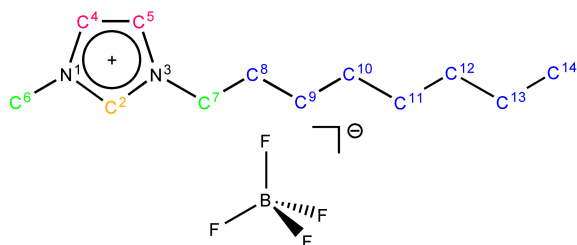
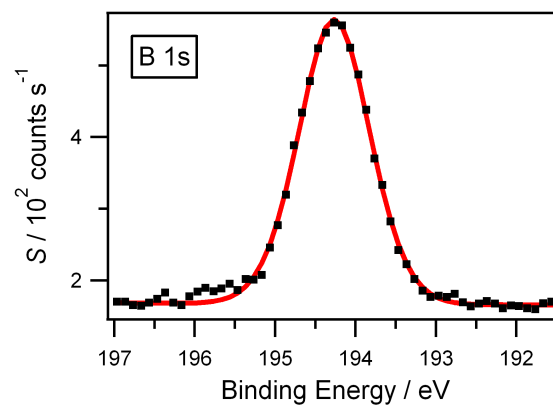
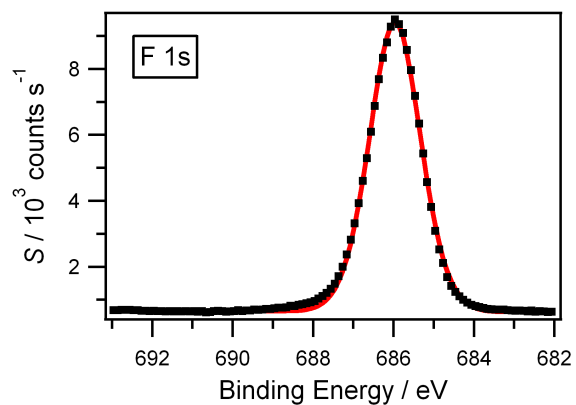
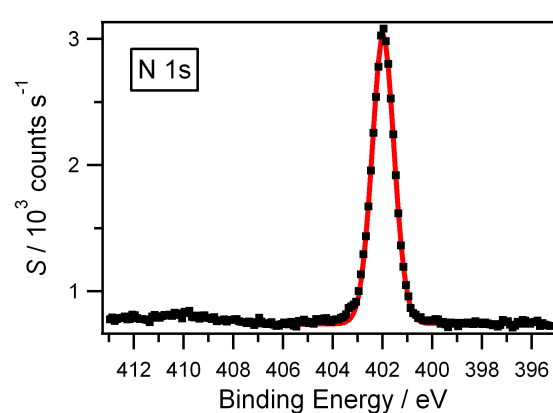
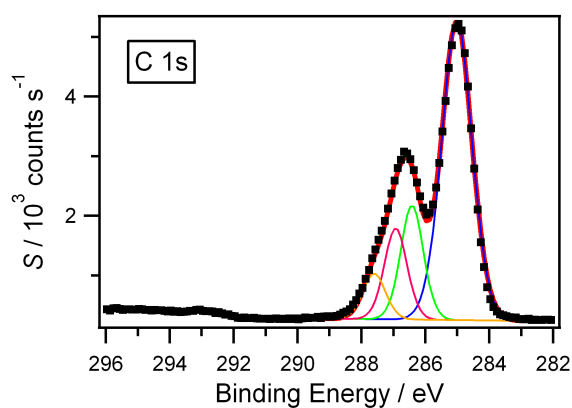
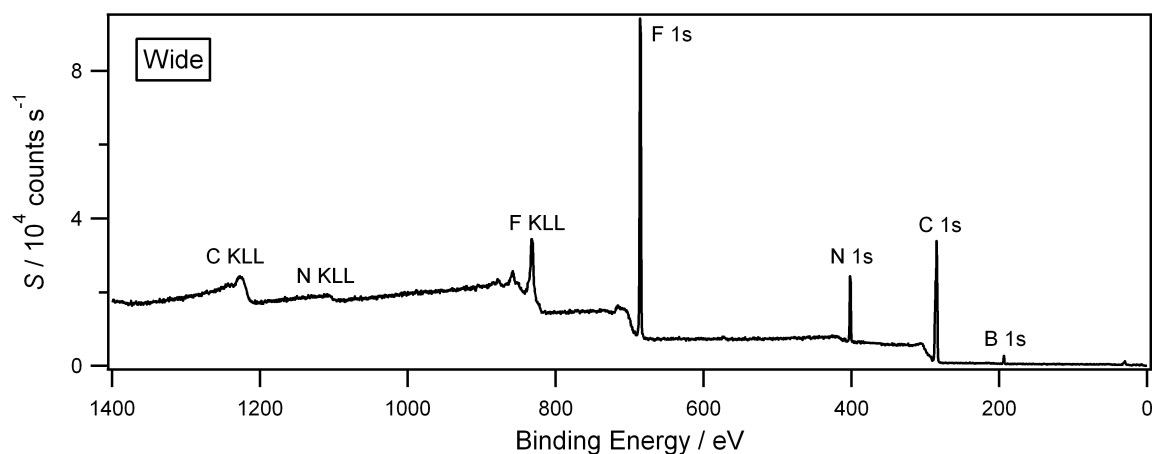
S1.3 [C₈C₁Im]⁺I⁻ wide and high resolution scans.



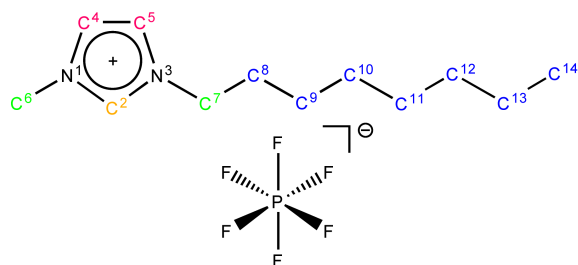
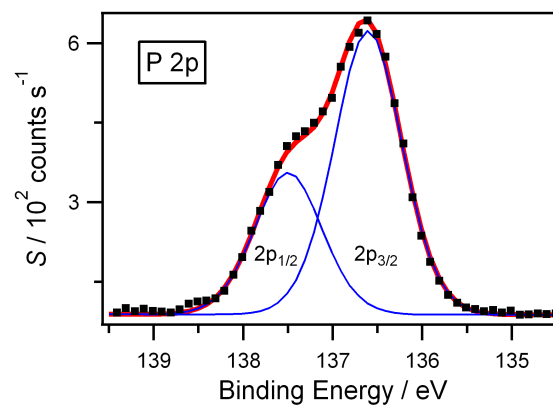
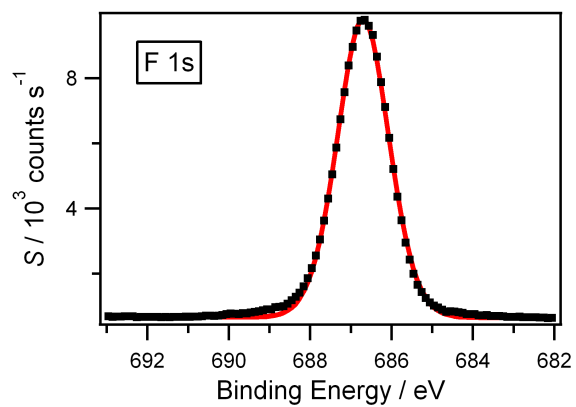
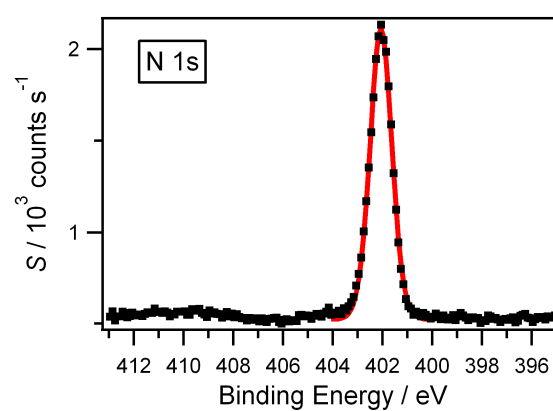
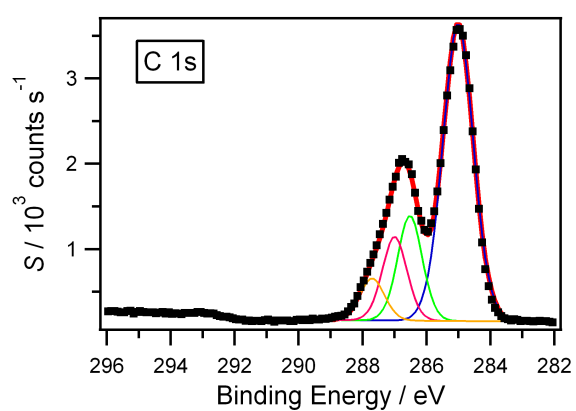
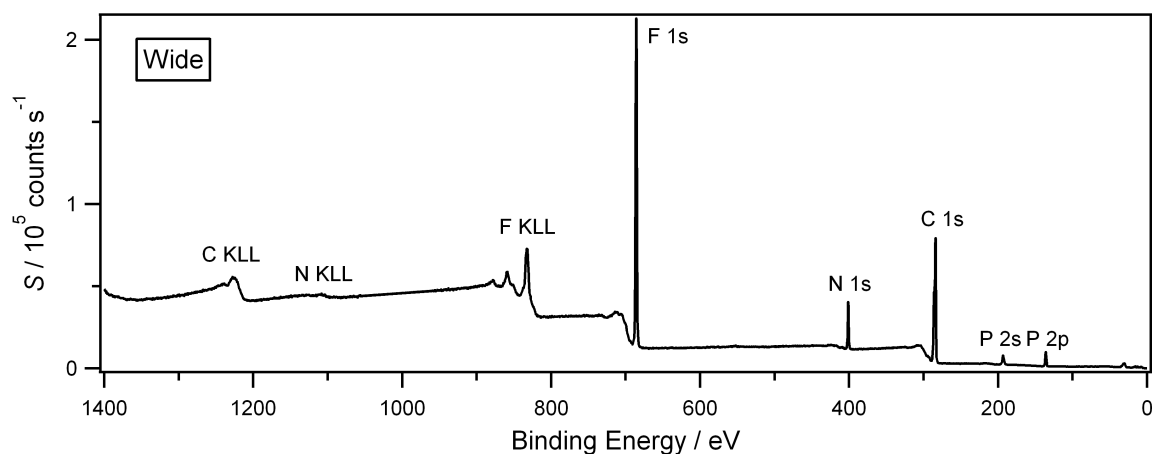
S1.4 [C₈C₁Im][N(CN)₂] wide and high resolution scans.



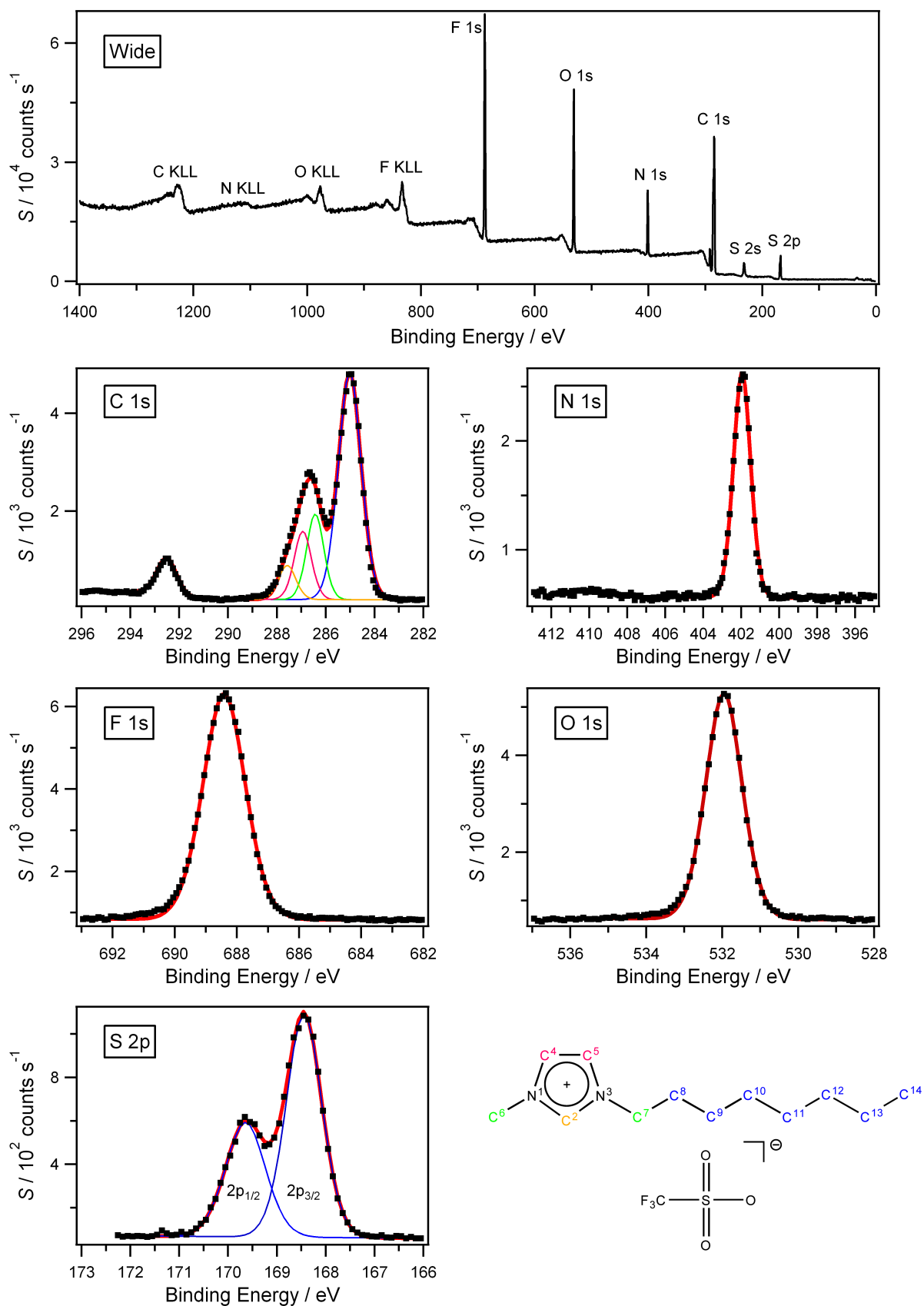
S1.5 [C₈C₁Im][BF₄] wide and high resolution scans.



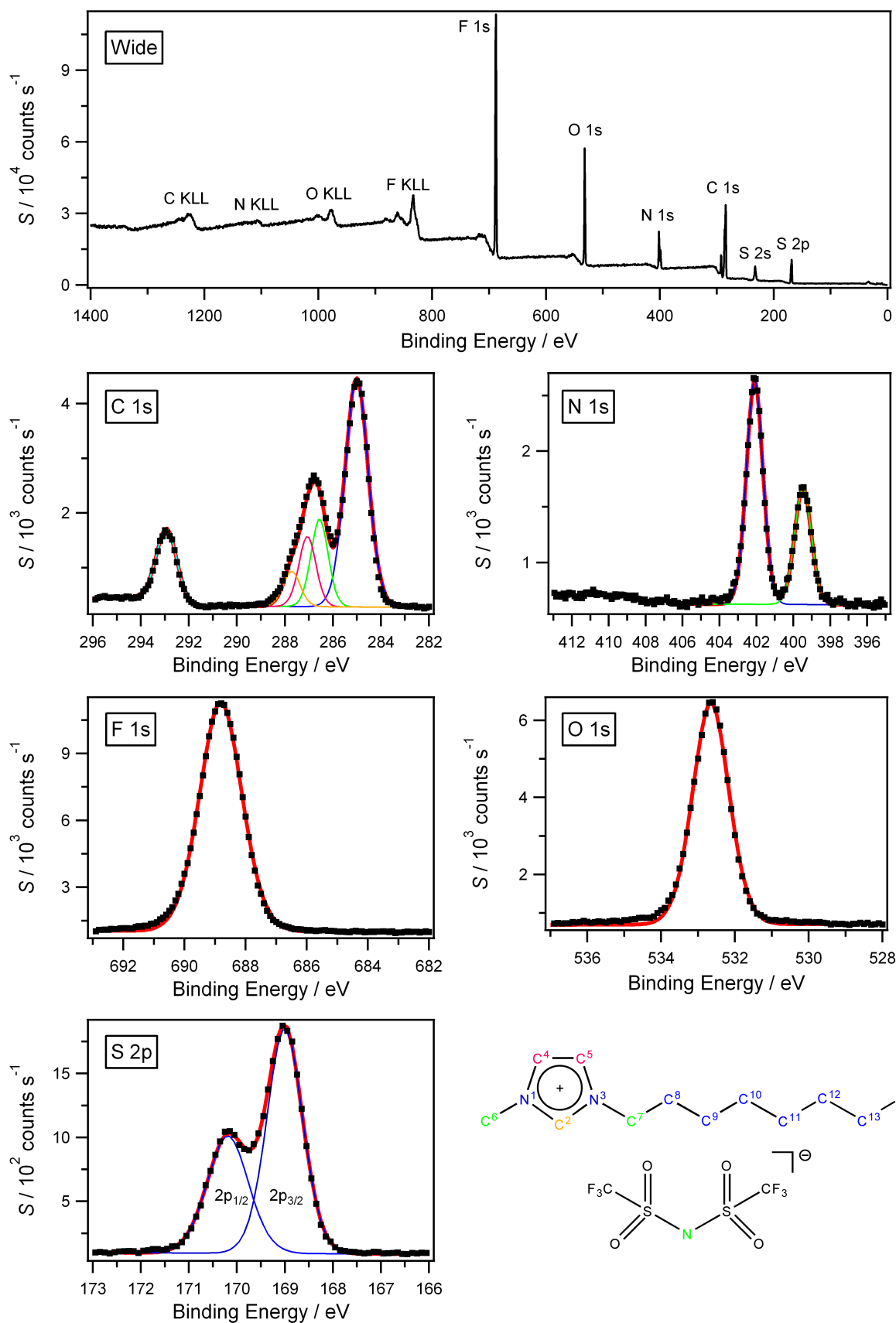
S1.6 [C₈C₁Im][PF₆] wide and high resolution scans.



S1.7 [C₈C₁Im][TfO] wide and high resolution scans.



S1.8 [C₈C₁Im][Tf₂N] wide and high resolution scans.



References

1. J. F. Moulder, W. F. Stickle, P. E. Sobol, K. D. Bomben, *Handbook of X-ray photoelectron spectroscopy: a reference book of standard spectra for identification and interpretation of XPS data*; Physical Electronics: Eden Prairie, MN. 1995.
2. H. W. Nesbitt, G. M. Bancroft, R. Davidson, N. S. McIntyre, A. R. Pratt, *Am. Miner.* **2004**, *89*, 878-882.
3. I. J. Villar-Garcia, PhD Thesis, University of Nottingham, 2009.