

# Electronic Supporting Information (ESI) for 'Online measurement of photoisomerisation efficiency in solution using ion mobility mass spectrometry'

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## $E/Z$ ratio with light pulse energy

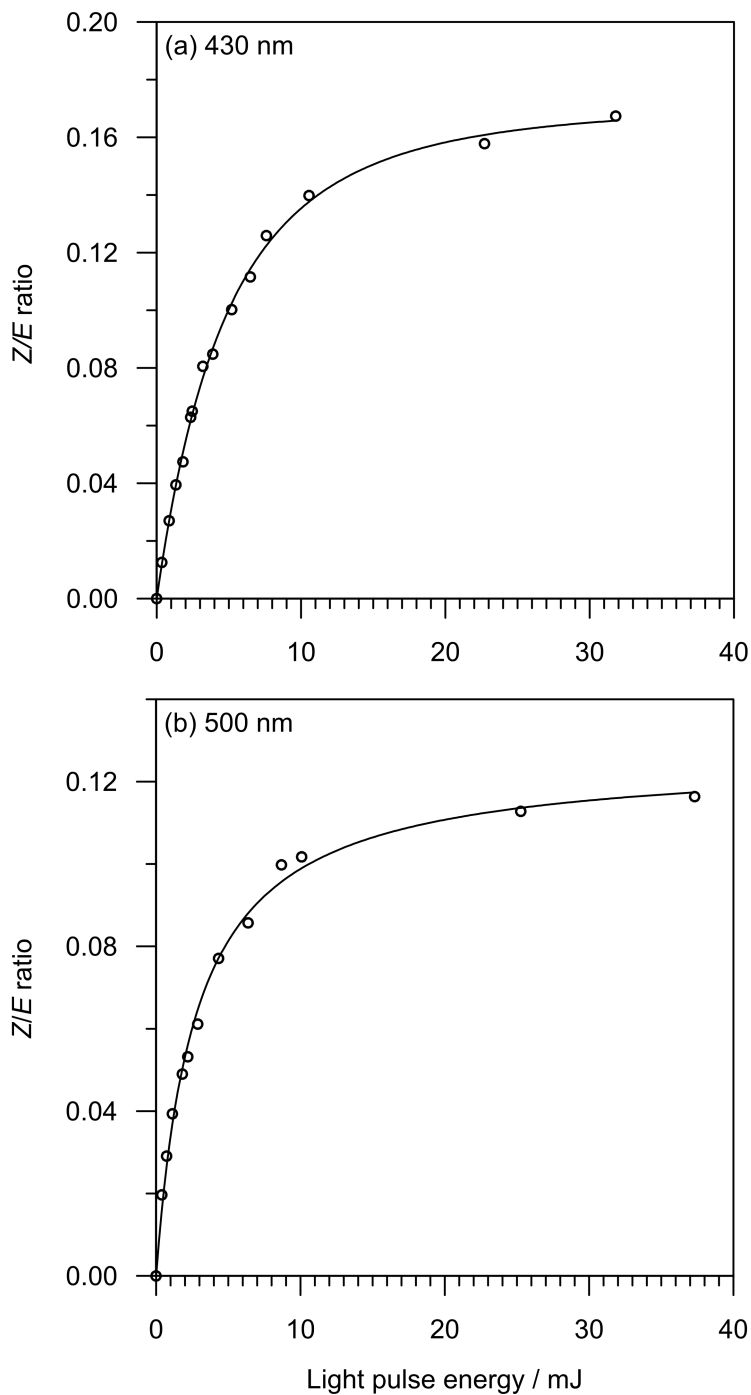


Figure 1:  $E/Z$  population ratio plotted against light pulse energy at (a) 430 nm and (b) 500 nm. The linear low irradiation power regime corresponds to  $\leq 1$  mJ pulse<sup>-1</sup>.

## Experimental details for gas-phase photoisomerisation measurements

The gas-phase photoisomerisation measurements used the same IMS instrument, except the light beam ( $2\text{-}3\text{ mJ cm}^{-2}$  pulse) was timed to interact with every second packet of *E*-[2PA-MOEmim]<sup>+</sup> isomers half way down the drift region of the IMS. Any product isomers with a different collision cross-section to *E*-[2PA-MOEmim]<sup>+</sup> separate in time and space as they traverse the second half of the drift region. The difference between the light-on and light-off ATDs (action signal) reflects the photoisomerisation response. The action signal was normalised with respect to total light-off ion signal and light pulse energy. A similar experimental approach has been used to study the photoisomerisation of polyene dye molecules,<sup>1,2</sup> retinal protonated Schiff base,<sup>3-5</sup> and merocyanine.<sup>6</sup>

## References

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