Electronic Supplementary Information (ESI)

Spatiotemporal effects of a bioautocatalytic chemical wave revealed

by time-resolved mass spectrometry

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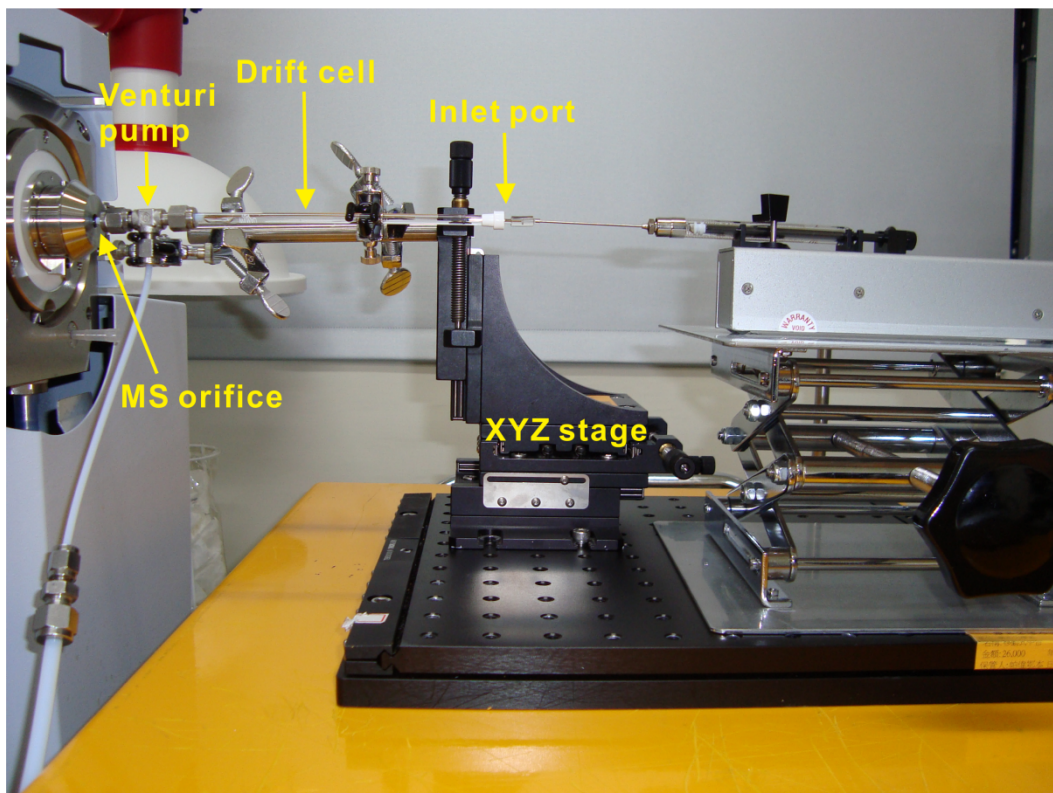
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ADDITIONAL FIGURES

Figure S1. Experimental setup used for testing the speed of propagation of classical mass transport (due to diffusion and convection), and the proposed reaction-aided chemical wave.
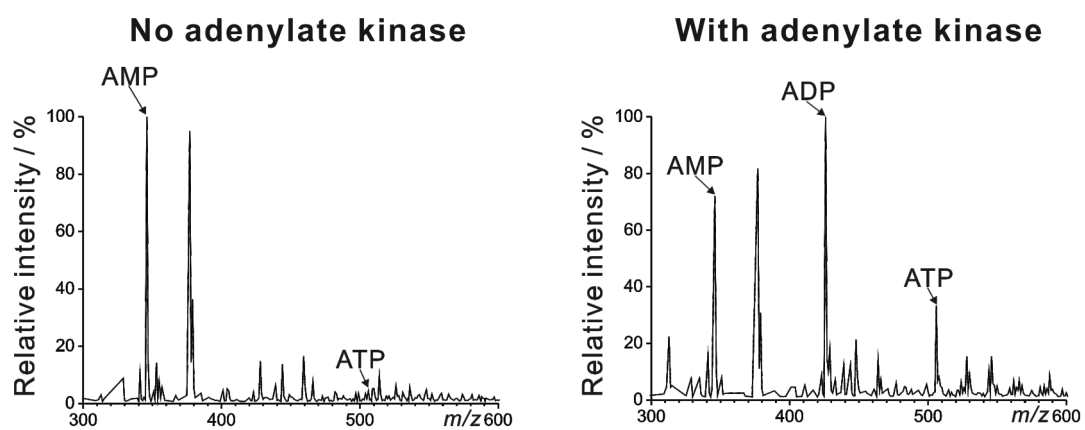
No adenylate kinase **With adenylate kinase**

Figure S2. Optimization of the bienzymatic reaction system (eq. (1) and (2)). Representative mass spectra obtained after incubation of reactants with pyruvate kinase (left), or pyruvate kinase and adenylate kinase (right; incubation time: 60 min).
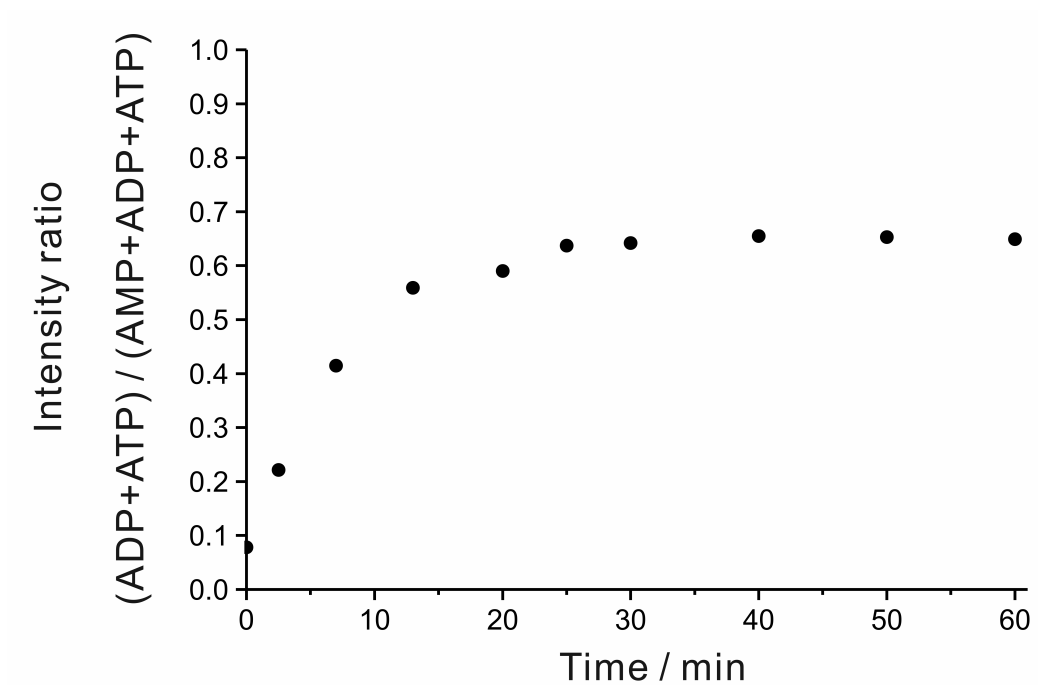
Figure S3. Time progress of the *in-vitro* synthesis of ADP/ATP recorded by mass spectrometry during optimization.
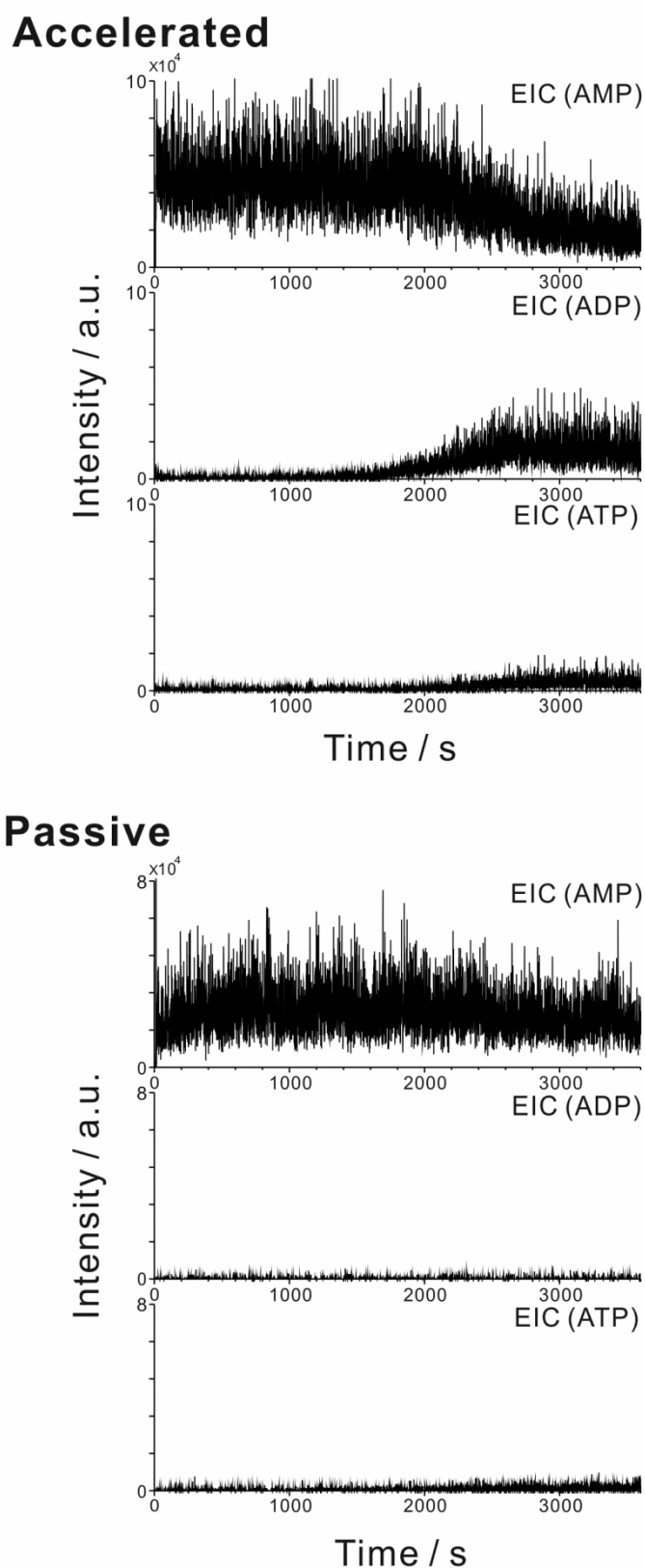
Figure S4. Propagation of a bioautocatalytic chemical wave in a horizontal drift cell, recorded online by time-resolved mass spectrometry. Raw data (extracted ion currents) obtained in the same experiment as the one illustrated in **Fig. 2**.
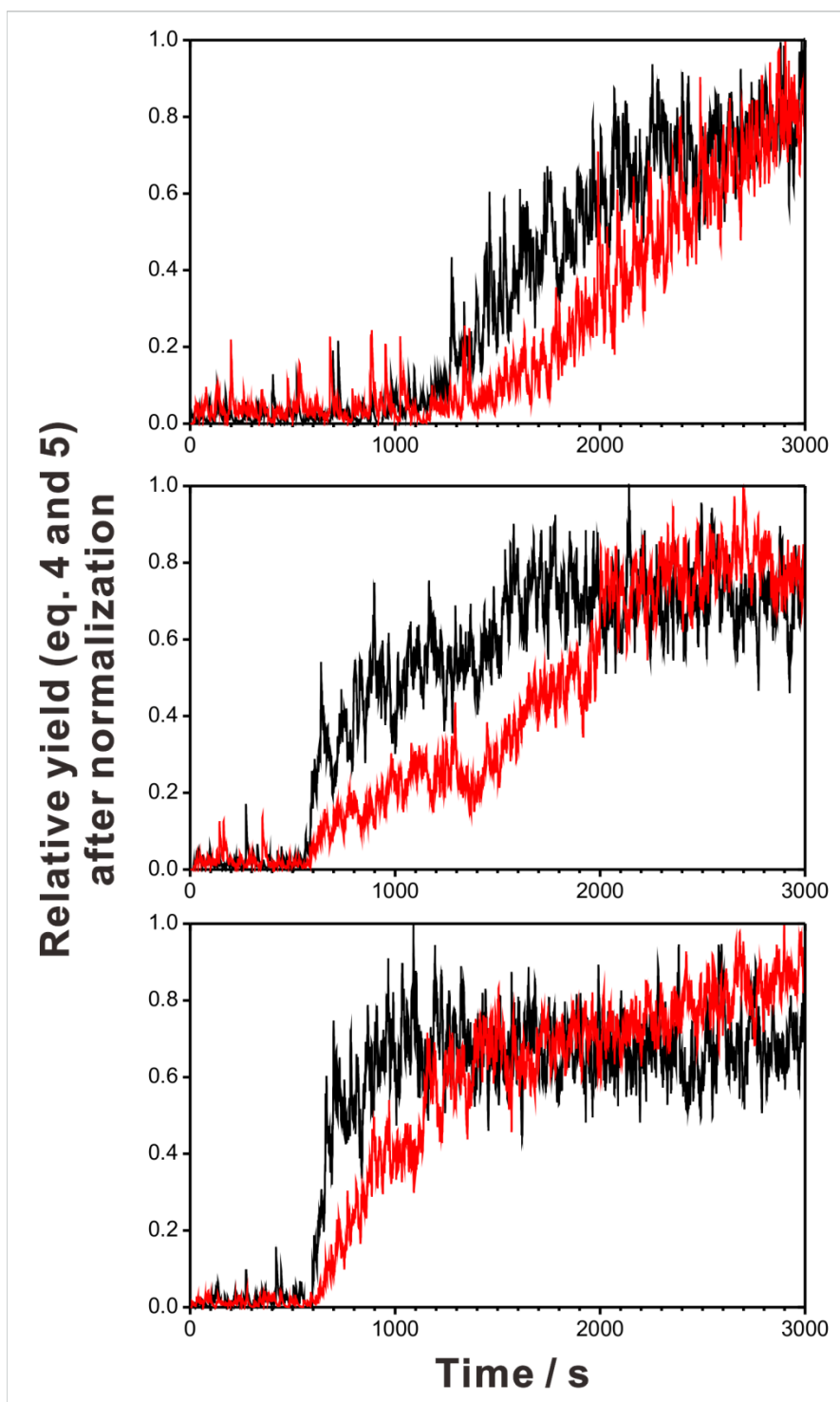
Figure S5. Transport of labelled and unlabelled ATP along the drift cell. Concentration of the $^{13}C_{10}$-ATP trigger: 5×10^{-3} M. These three results are replicates of the result shown in **Fig. 3** (lower panel). Exponential smoothing with a time constant of 4.1 s has been applied, and followed by normalization (scaling to the maximal value).
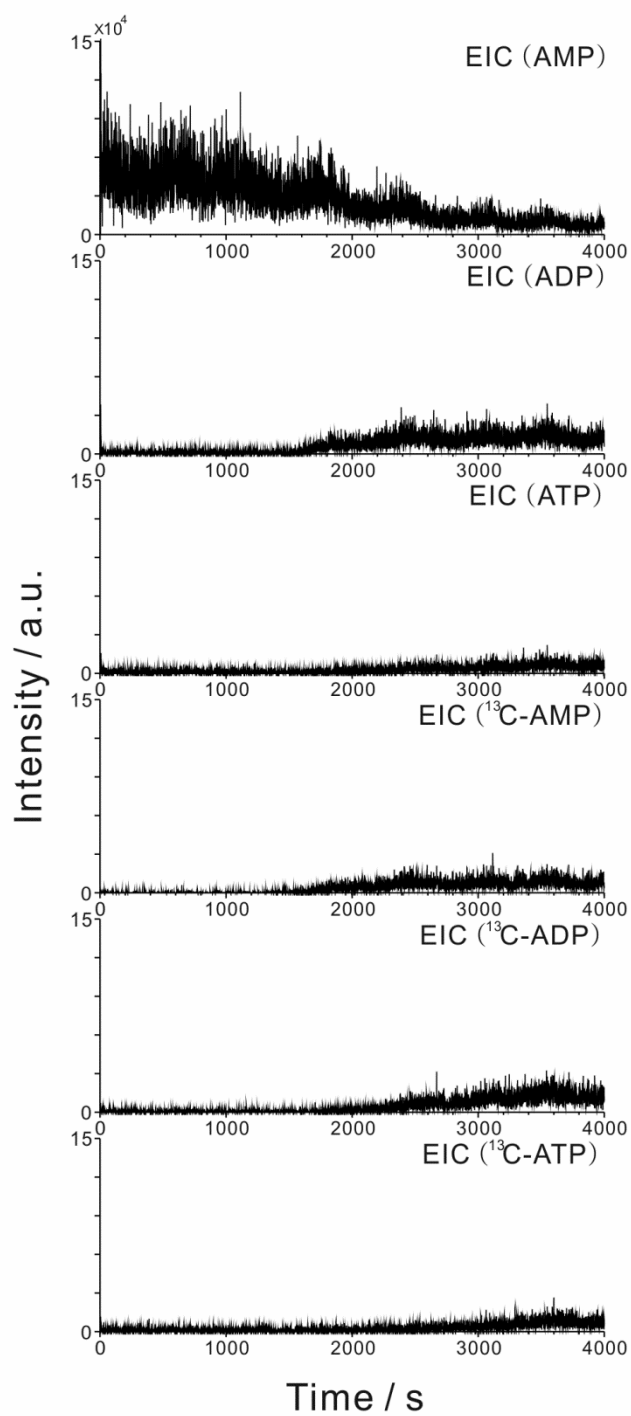
Figure S6. Transduction of labelled and unlabelled ATP along the drift cell. Raw data (extracted ion currents) obtained in the same experiment as the one illustrated in **Fig. 3** (bottom). Concentration of the $^{13}C_{10}$-ATP trigger: 5×10^{-3} M.