

Flow Injection – Capillary Electrophoresis (FI-CE): Design & Development

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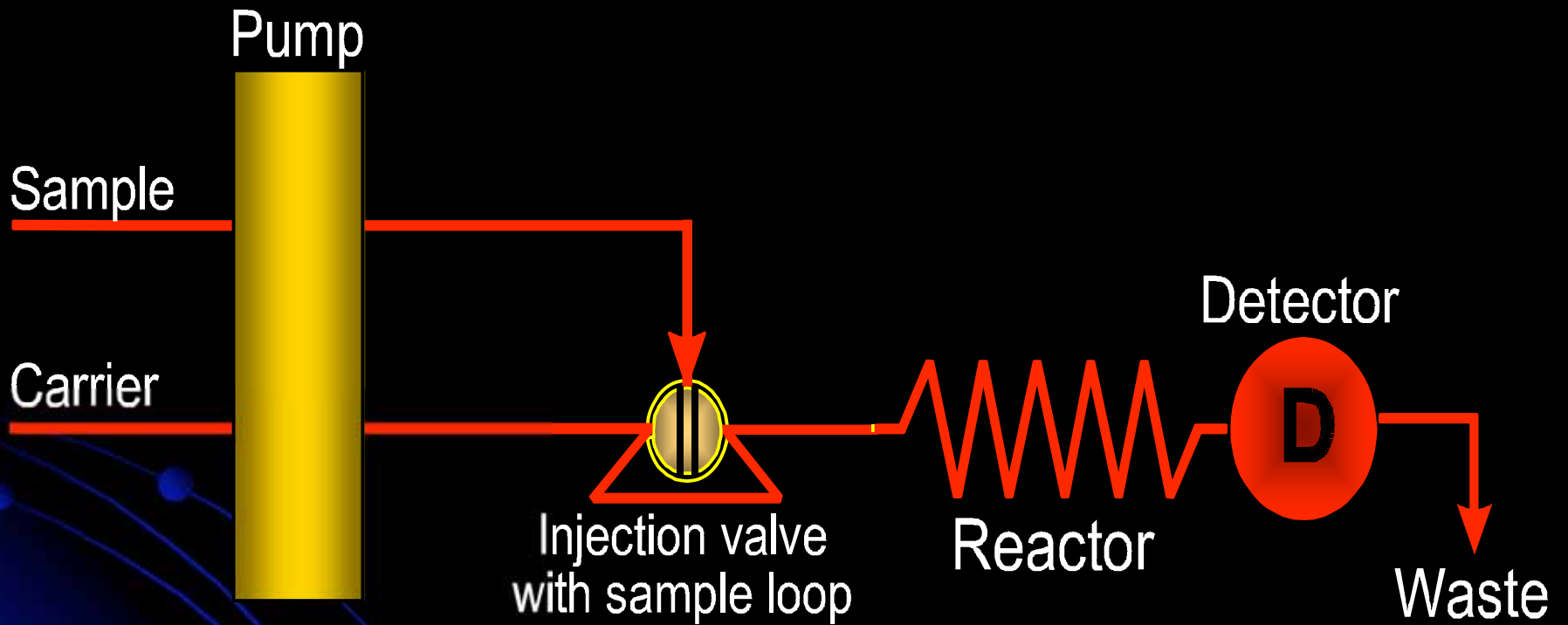


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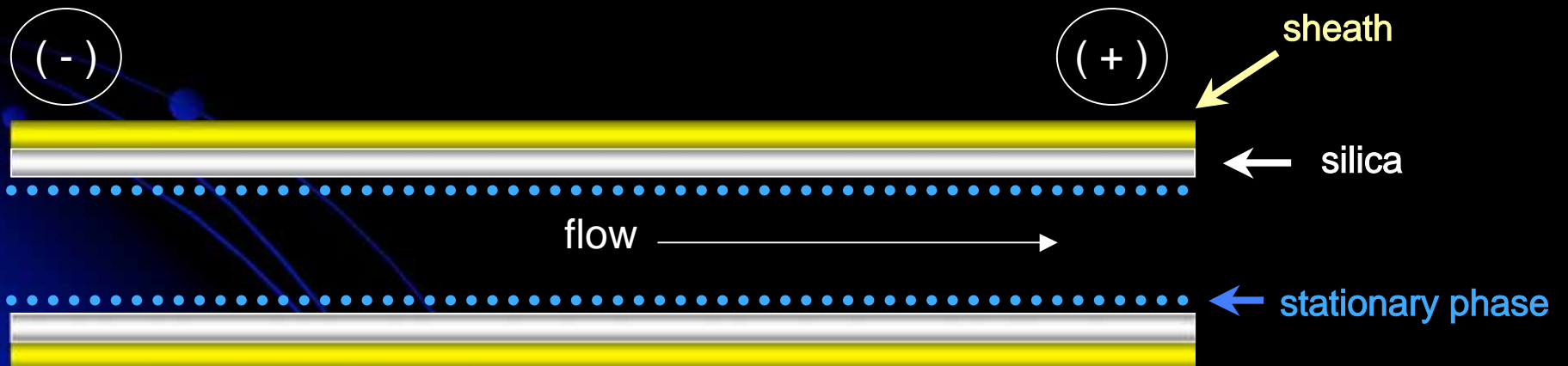


Flow Injection Analysis (FIA)



Capillary Electrophoresis (CE)

- Separates analytes based on mass-to-charge (m/z) ratio under an applied electric field
- Small inner diameters (I.D. = 50 - 100 μm)



Capillary Electrophoresis

Advantages:

- An efficient separation technique
- Short analysis time
- High resolution
- Minimal sample requirement

Disadvantages:

- Discontinuous sample introduction
- Complicated off-line sample pretreatments

Flow Injection – Capillary Electrophoresis (FI-CE)

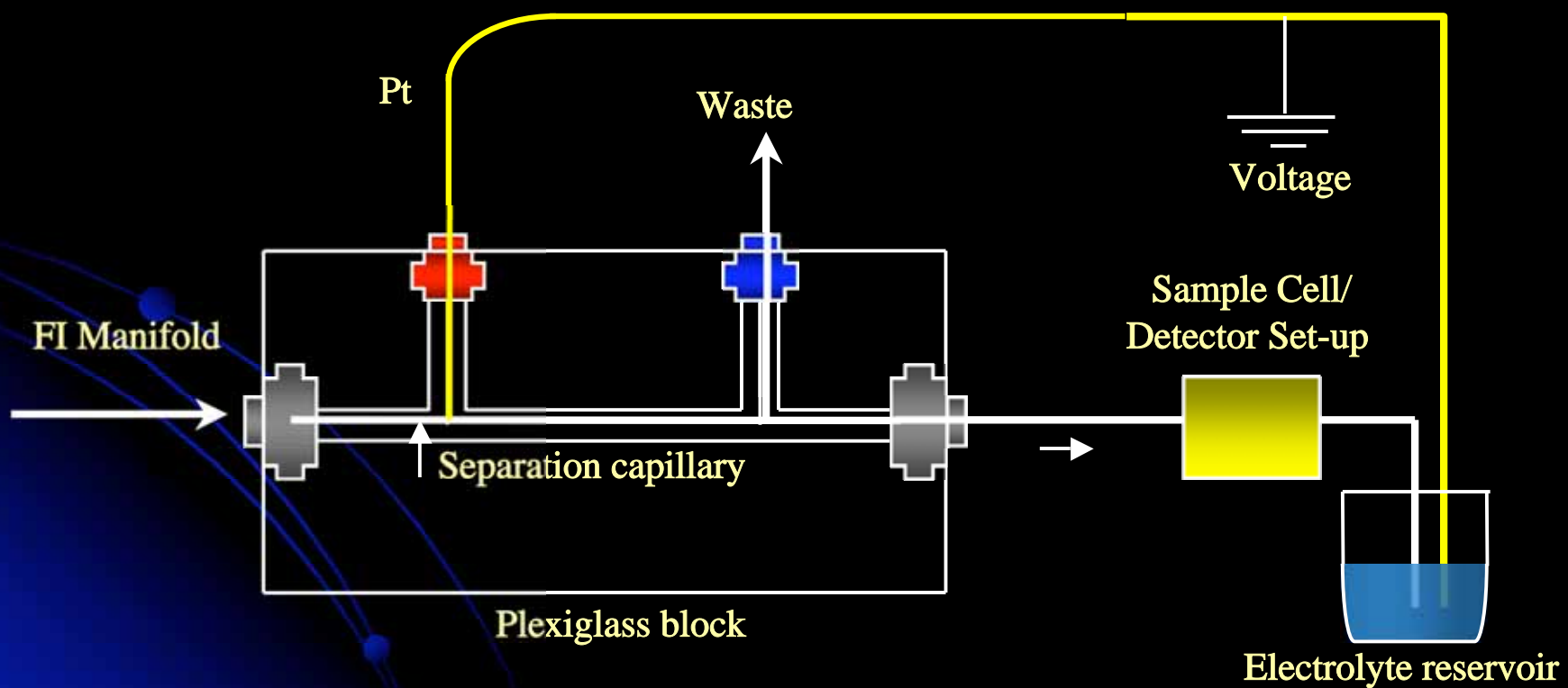
Advantages of FI-CE:

- Efficient and reliable sample introduction
- On-line sample pretreatments (filtration, preconcentration, and sample dilution)
- Precise and reproducible peaks and retention time
- Samples analyzed using multiple injections

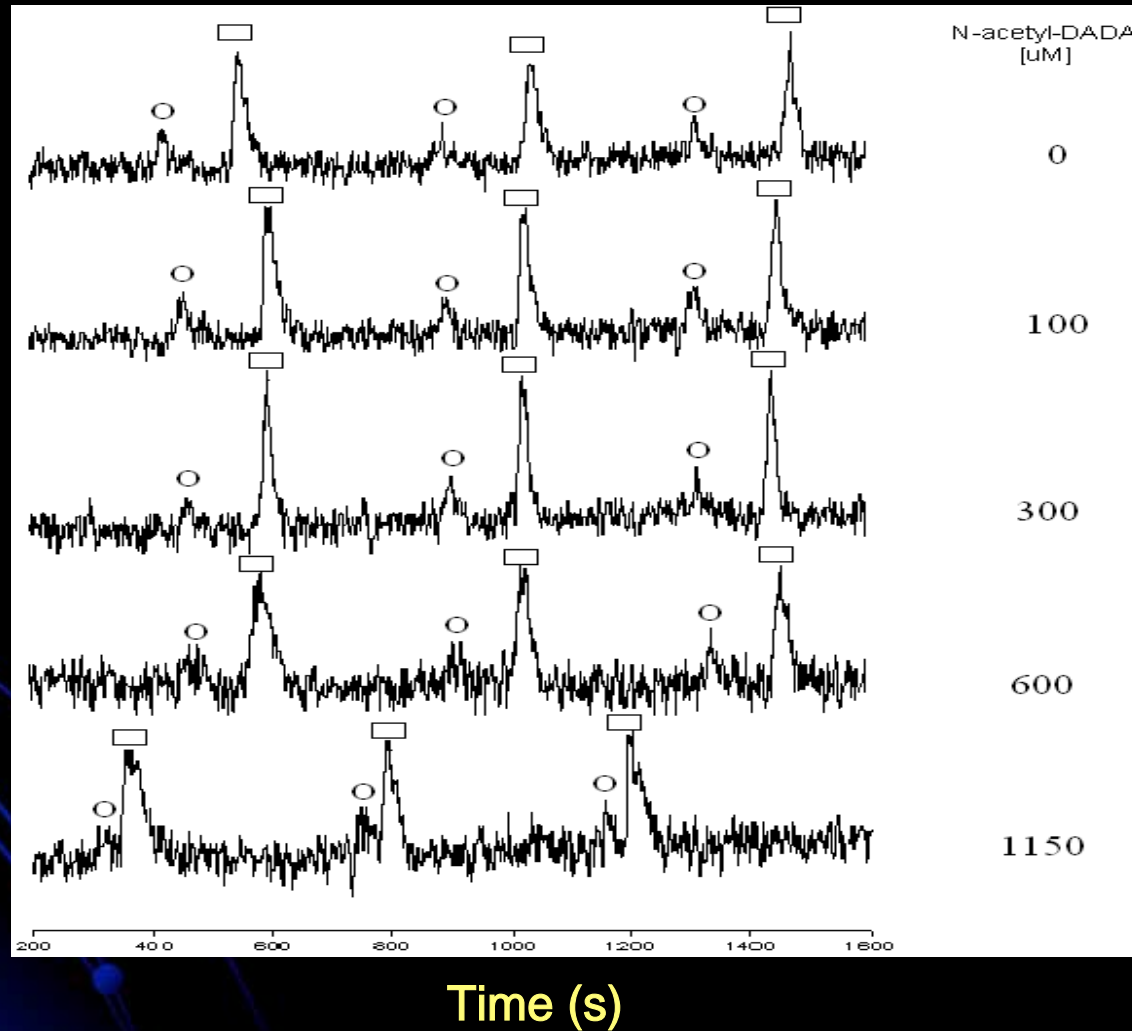
Cheng, Y.; Chen, H.; Li, Y.; Chen, X.; Hu, X. *Talanta*, 2004, 63, 491

Hanrahan, G.; Dahdouh, F.; Clarke, K.; Gomez, F. *Current Analytical Chemistry*, 2005 (accepted).

FI-CE Lab-on-Block Design



Flow Injection – Affinity Capillary Electrophoresis (FI-ACE)



Summary

- To fully develop the FI-CE instruments of lab-on-block
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- Environmental and biological reactions will be analyzed and results will be compared to other instruments in terms of limits of detection, sensitivity and overall reproducibility.

Acknowledgements

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