Using Microfluidic-CE Devices for various Bioanalytical Applications

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Outline

• Introduction
• Low pressure Microfluidic-CE Separations
• Lipid-ligand binding and Microfluidics
• Camadulin binding to Ca$^{2+}$ on a Microfluidic platform
• Acknowledgements
Microfluidics-CE

Microfluidic Chip

CE Set up

Capillary Electrophoresis

- Light source
- Computer
- Data In
- Photocathode
- Data Out
- Chart Recorder
- Anode
- Cathode
- Chart Recorder
- Time (min)
- Ab (280 nm)
Factors involved

1. Factor CE Microfluidics
2. Voltage 30Kv 5kv
3. Press. 20psi 1psi
4. Cost $$ $$$$ 
5. Flow EOF Laminar/EOF

- Voltage = 3kv-10kv
- Conc. = .432 -1mM
- Flow rate = 1.2nl/sec
- Pressure = 1 psi
Electropherograms

- Multiple injection of NAD
- Electrokinetic injection of NAD/NADH
- Separation of NAD/NADH
A new attempt
Two other Applications

1. **Lipid-ligand binding and Microfluidics**
   - Making lipid bilayer = UV detection
   - Using fluorescent tagged lipids = Photo counting
   - Determine binding by decrease in fluorescent intensity

2. **Camadulin binding to Ca^{2+}**
   - Prove of concept based on literature
   - Apply on Microfluidic platform
Acknowledgement

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- Lab Group
- You