

Lecture C2:
Electric Field-Driven Separations
*Ion Mobility Spectrometry, Gel Electrophoresis
and Capillary Electrophoresis*

CU- Boulder
CHEM 5181
Mass Spectrometry & Chromatography

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R. Weinberger: Practical Capillary Electrophoresis, Academic Press, 1993

Objective of Today's Lecture

- Learn about separations driven by electric fields
 - *Not under vacuum!* (unlike MS)
 - In a gas: “Ion Mobility Spectrometry”
 - In a liquid: “Electrophoresis”
- We teach them under chromatography, but chromatographic principles (partitioning between phases) do not apply in most cases

Books on Electroseparations

Author	Publisher	Title	\$ on Amazon	Comments
Robinson & Robinson	Prentice-Hall	Contemporary Instrumental Analysis, 2000 (QD79.J5 R83 2000 - <i>In Library</i>)	\$127	Good Basic Chapter of CE and IMS
Weston & Brown	Academic	HPLC & CE, 1997 (QD79.C454 H83)	\$82	Good reference with lots of pointers to the research literature
Curico, Gooding, & Wehr	Bay Biosanalytical Labs	Basic HPLC and CE of Biomolecules, 1998 (QP519.Q.H53 C88)	\$40	Good, practical reference, read it if you use these techniques a lot for biomolecules
Weinberger	Academic Press	Practical Capillary Electrophoresis, 2 nd Ed. 2000 (QP519.Q.C36 W45 2000)	\$105	General reference on CE

Part 1: Ion Mobility Spectrometry

“Mass spectrometry without the vacuum”

“Electrophoresis in the gas-phase”

A Common Application of IMS



A Common Application of IMS

