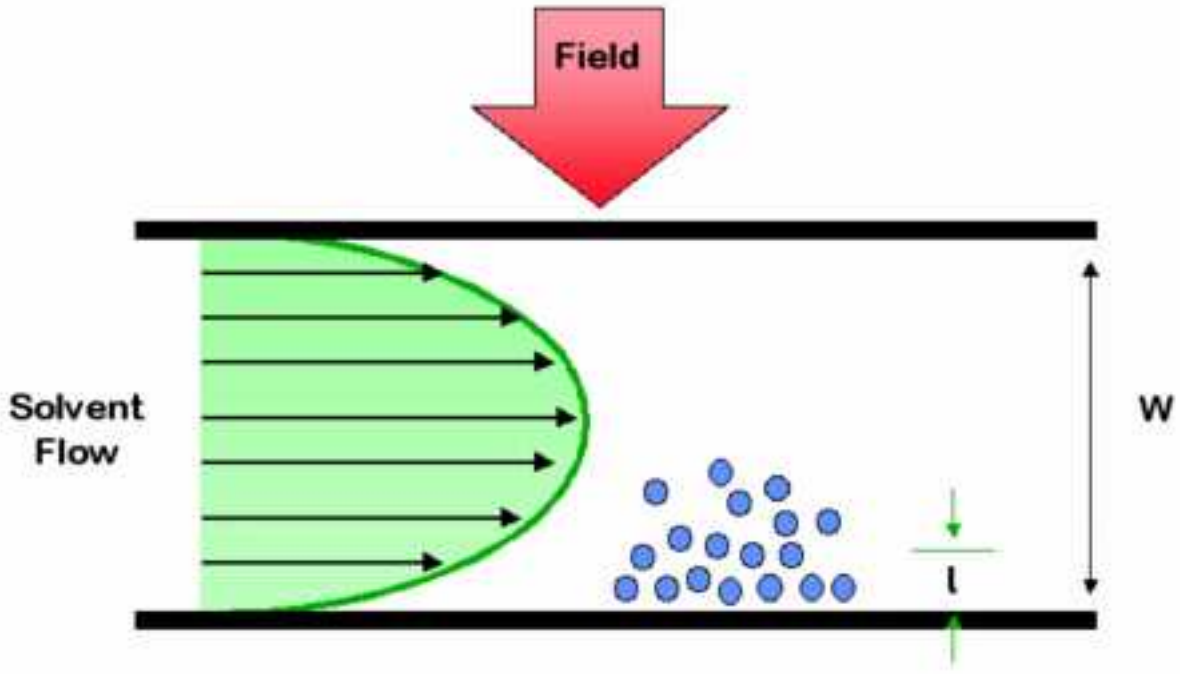
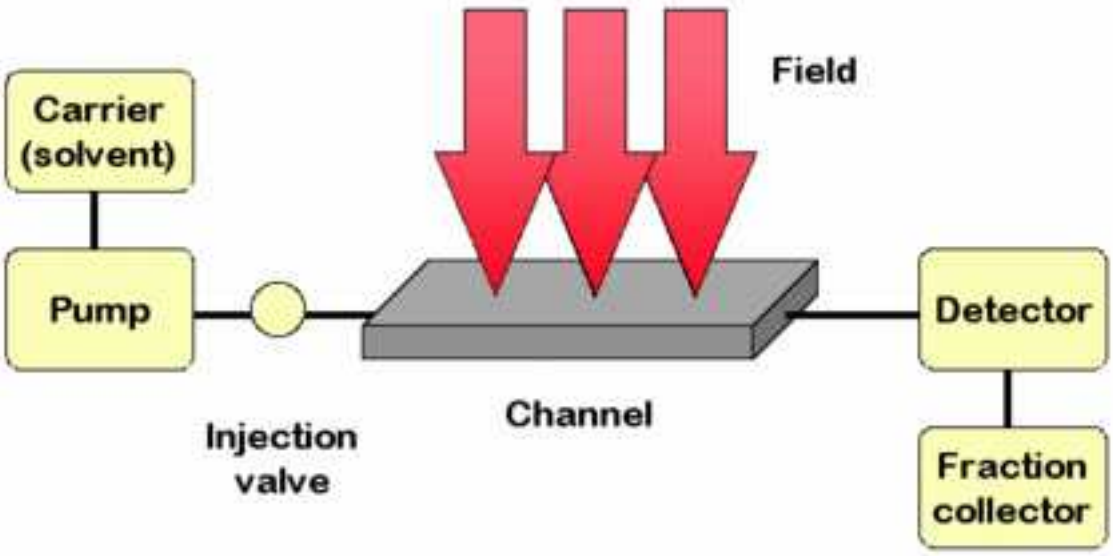
Field Flow Fractionation



Field Flow Fractionation



Field Flow Fractionation

Four common types of fields

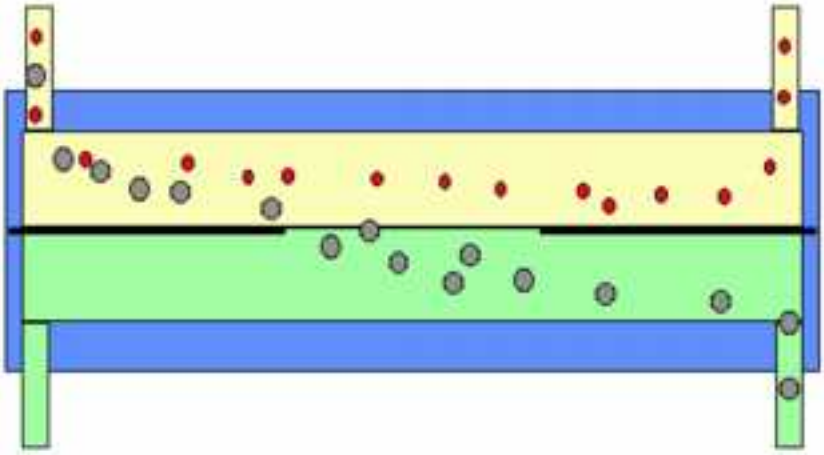
Sedimentation	V^o/V_r - M and d_p
Thermal	V^o/V_r - $D/D_T \alpha M^{-a}$
Hydraulic (Flow)	V^o/V_r - $D \alpha M^{-a}$
Electrical	V^o/V_r - D/μ

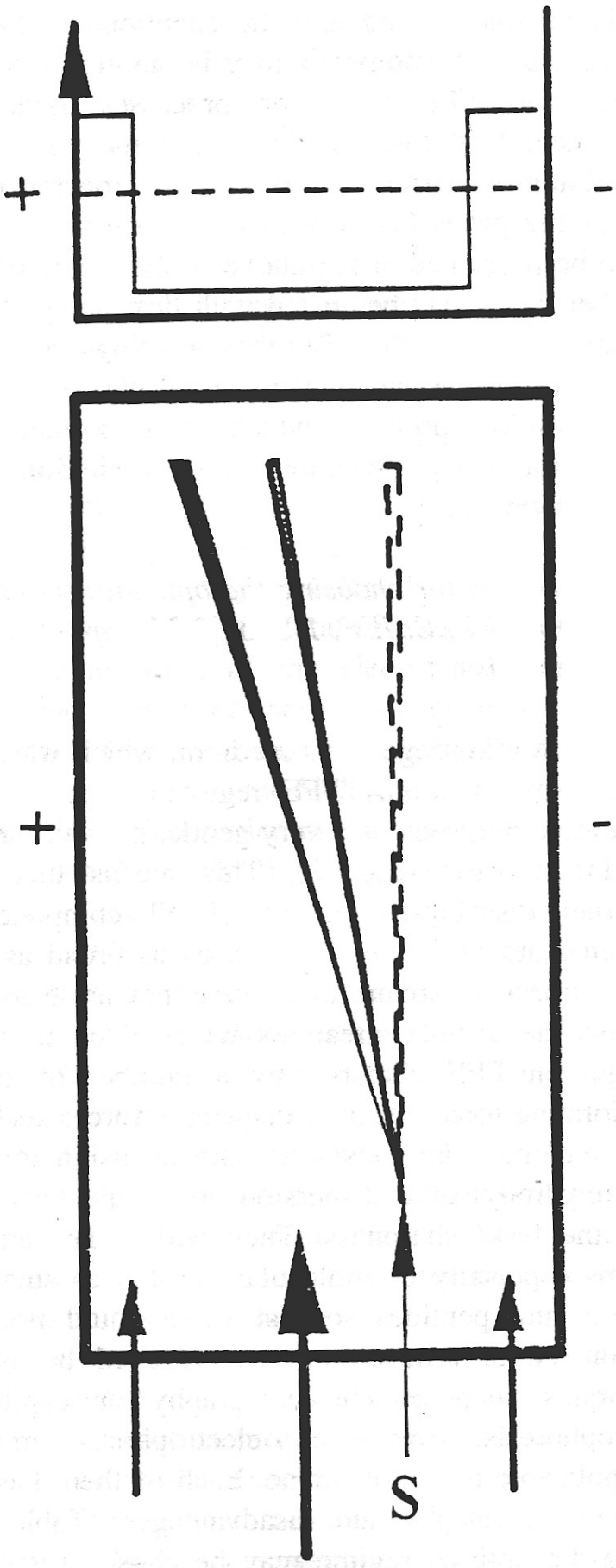
V^o - Column void volume
V_r - Retention volume
M - Molecular weight
μ - electrophoretic mobility

d_p - particle diameter
D - diffusivity
D_T - Thermal diffusivity
α - molecular conformation (0.33 - 0.65)

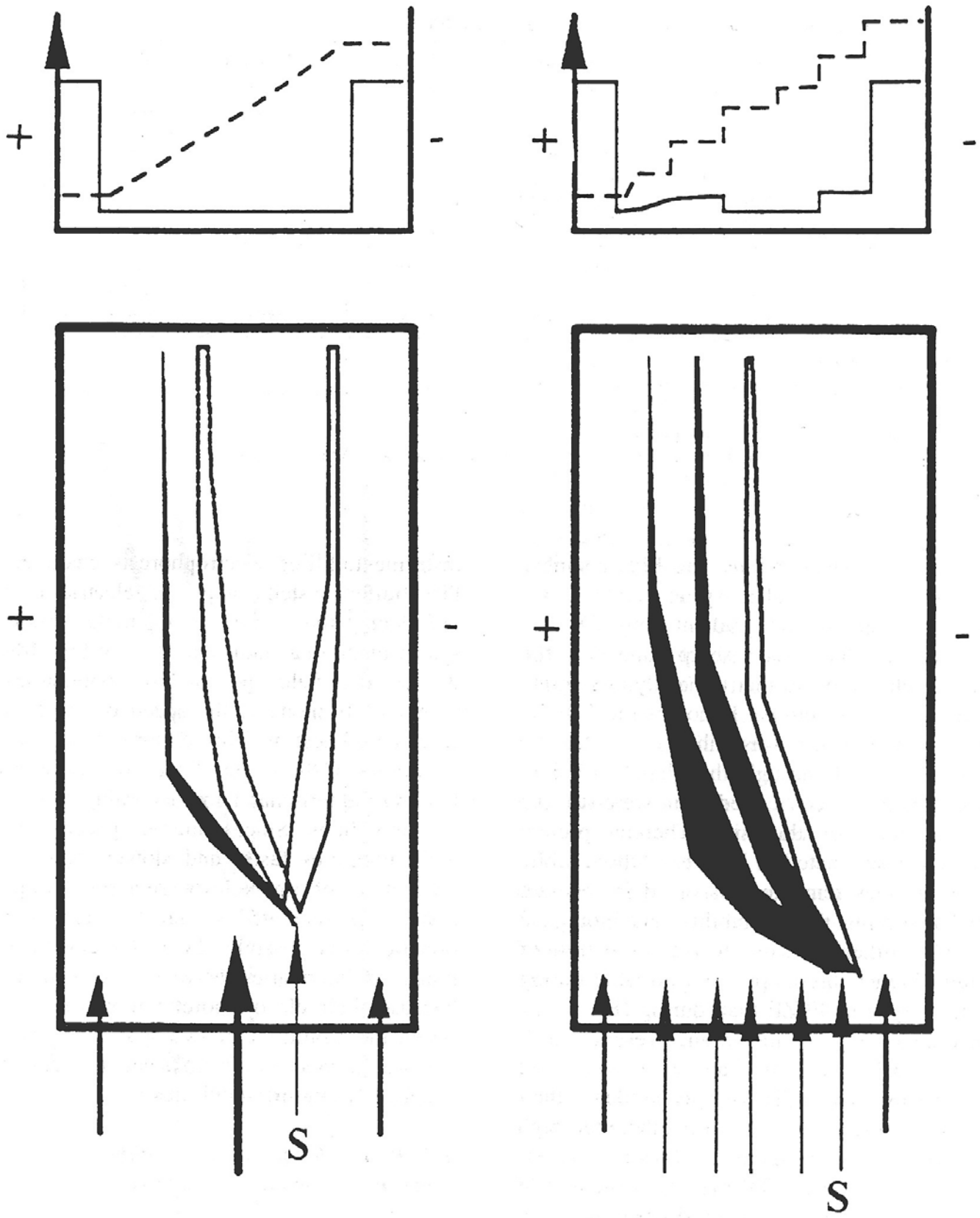
Field Flow Fractionation

Continuous, preparative example.

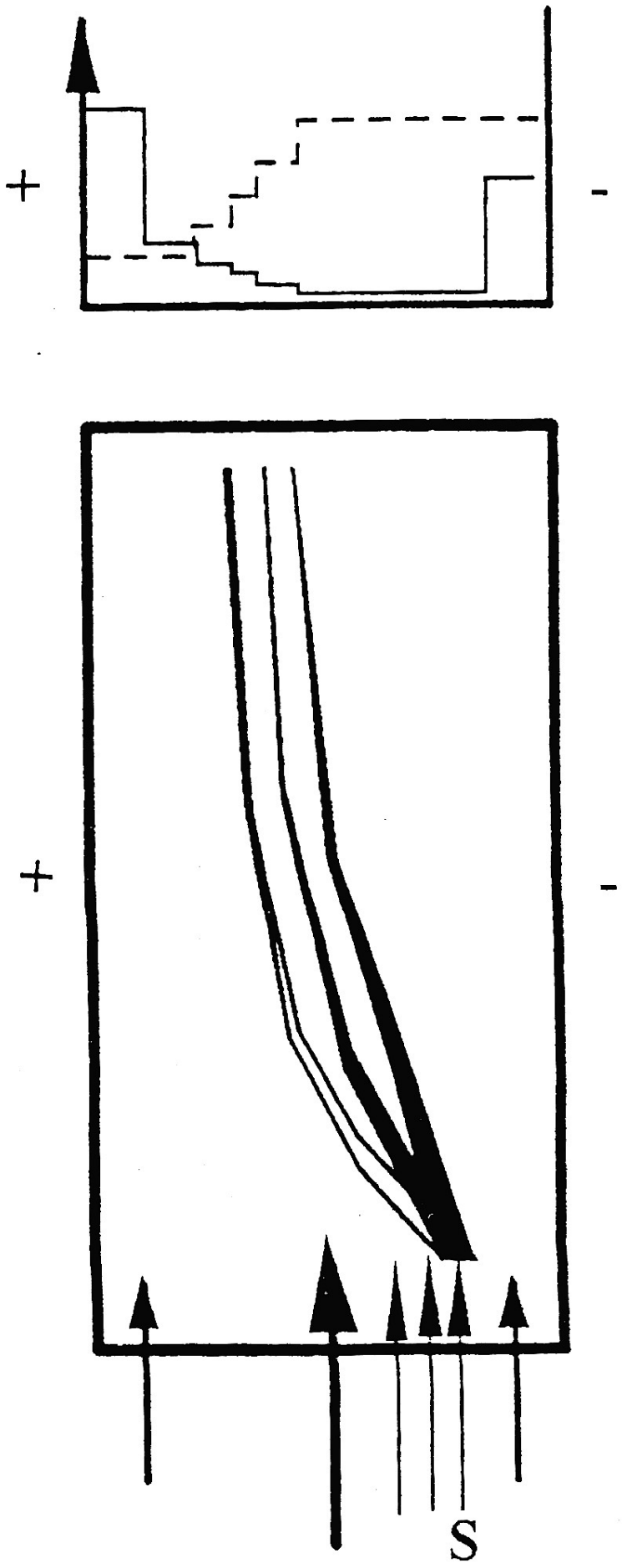




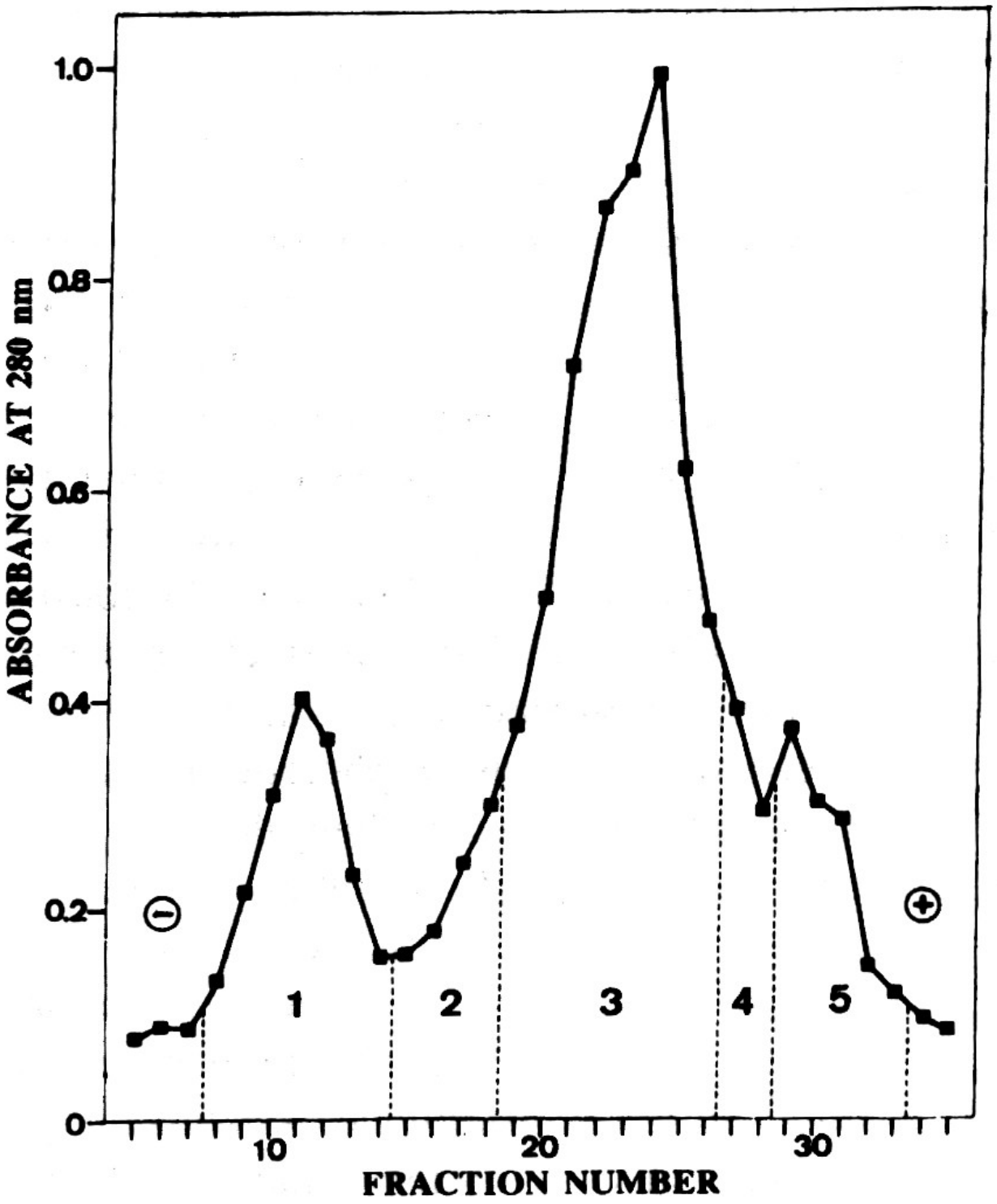
Scheme of conventional FFZE. Edged by two margin buffers, one homogeneous medium is pumped through the central chamber segment. The sample (S) is introduced as a sharp band, but is diluted on passage through the chamber while separated by the electrical current. The small upper scheme shows the pH (dashed line) and conductivity (solid line) profile obtained by analysing the buffer leaving the chamber.



Scheme of IEF in linear (left panel) and stepwise (right panel) pH gradients. For establishing a linear gradient one medium buffered by Octolytes was introduced together with both margin buffers into the chamber. The pH gradient is formed under the influence of the electrical current within a short distance after the application point. For establishing a stepwise gradient five central media and two margin fluids are pumped simultaneously through the chamber. S indicates the sample introduced either as a sharp band or dissolved in the most cathodal chamber medium. The small upper scheme shows the pH (dashed line) and conductivity (solid line) profile obtained by analysing the buffer leaving the chamber.



Scheme of ITP. Anodal margin buffer, leader medium (bold arrow) spacer fluids and terminator medium (=cathodal margin buffer) are introduced into the chamber as indicated. S indicates the sample dissolved in the most cathodal spacer medium. The small upper scheme shows the pH (dashed line) and conductivity (solid line) profile obtained by analysing the buffer leaving the chamber.



Absorbance at 280 nm of fractions obtained by free flow electrophoresis separation of total microsomes from maize roots. The microsomes were injected into the separation chamber near the cathode; thus, all membrane material was deflected towards the anode. The regions numbered 1–5 represent pooled fractions. The electrophoretic buffer was a triethanolamine–acetic acid based medium identical to that used for *Arabidopsis thaliana* seedlings (see text). The separation was carried out under conditions of constant amperage 170 mA, 1000±20 V, buffer flow 4.5 ml, fraction^{-1} h^{-1}, sample injection 2 ml h^{-1} (2.4 mg protein ml^{-1}) and a constant temperature of 4°C.