1. Stern layer – fiksen
2. Mobilni – difuzibilni dvosloj

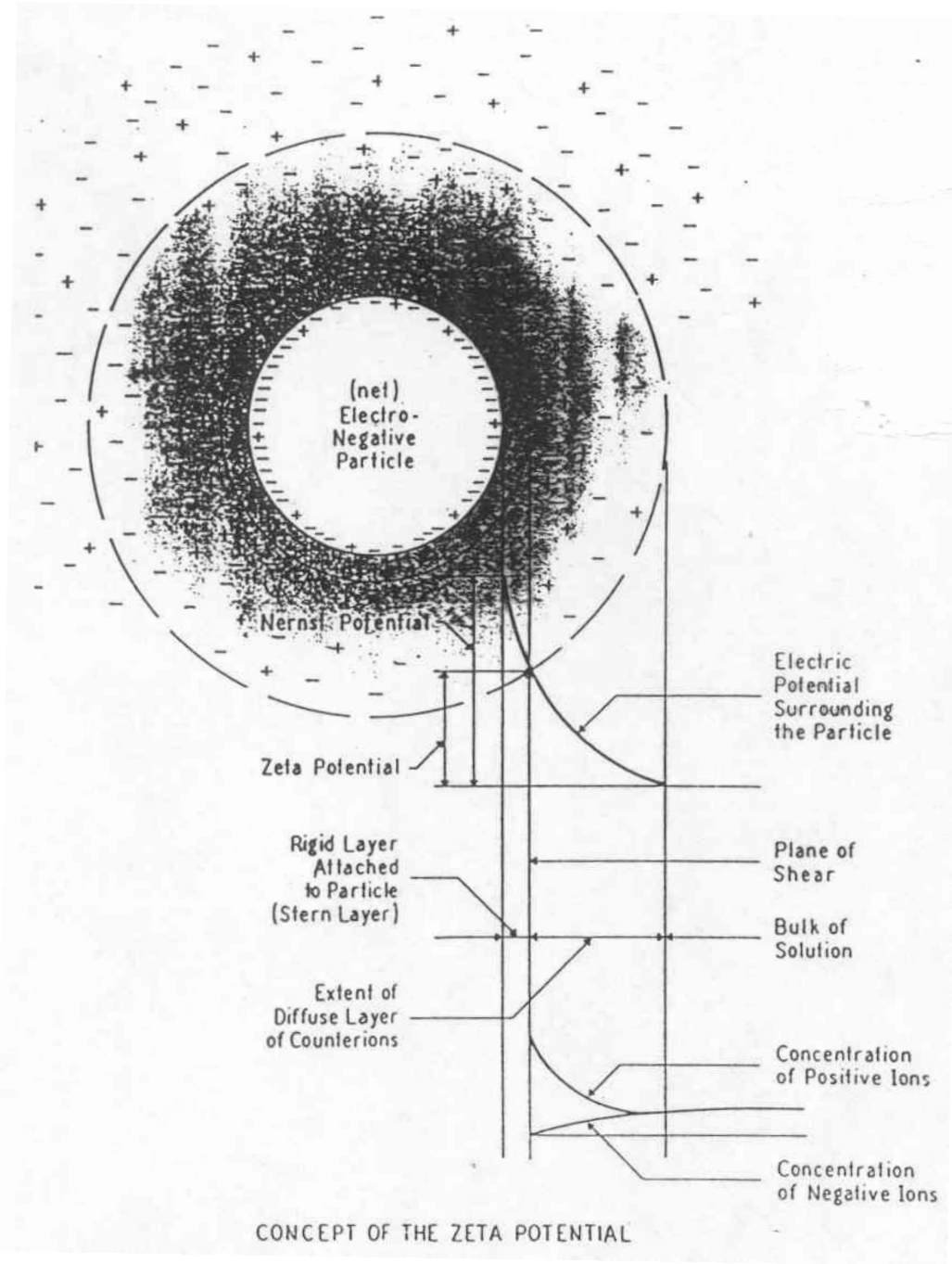


Figure 1: The electrical double layer at the surface of separation between two phases, showing distribution of ions. The system as a whole is electrically neutral.

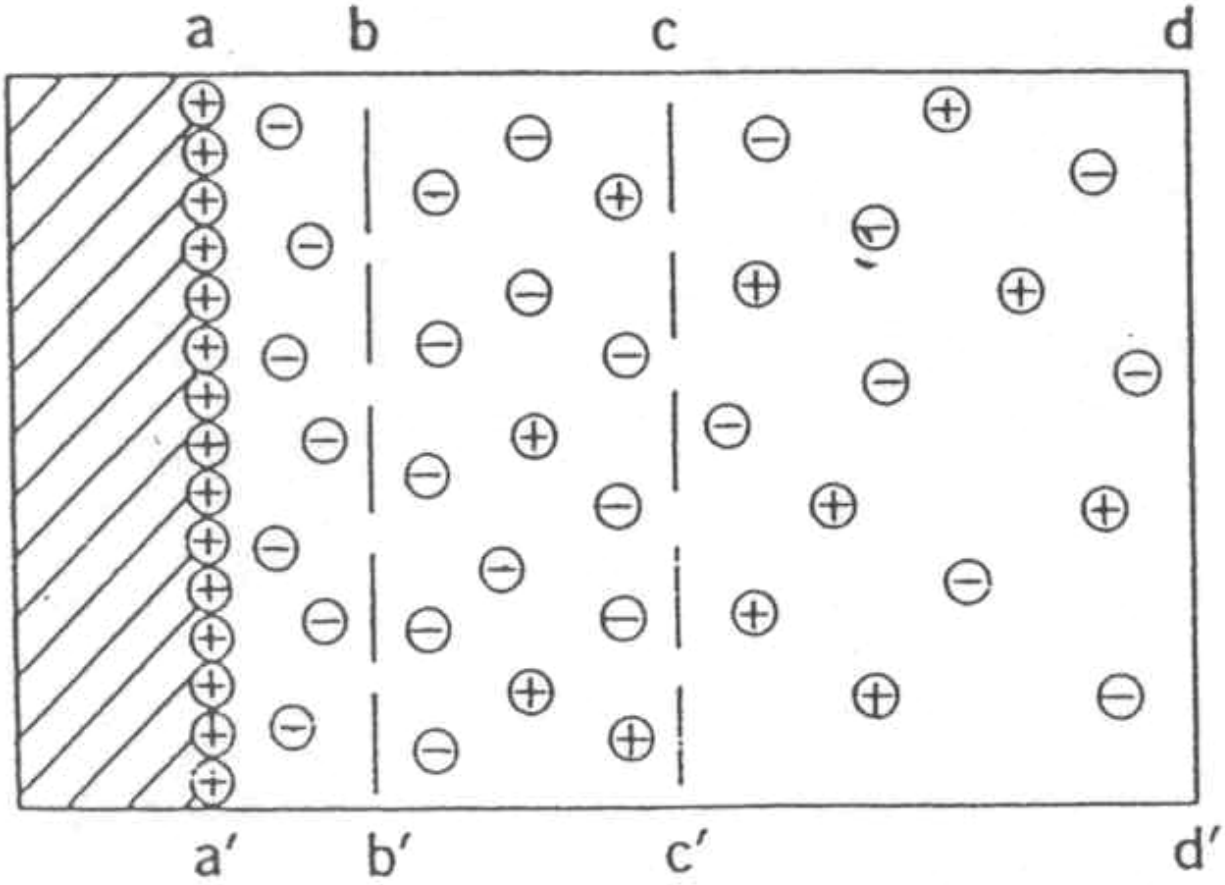


Figure 2: Electrokinetic potential at solid – liquid boundaries. Curves are shown for three cases characteristic of the ions or molecules in the liquid phase. Note that although *E* is the same in all three cases, the zeta potentials are positive (ζ_1), zero (ζ_2) and negative (ζ_3).

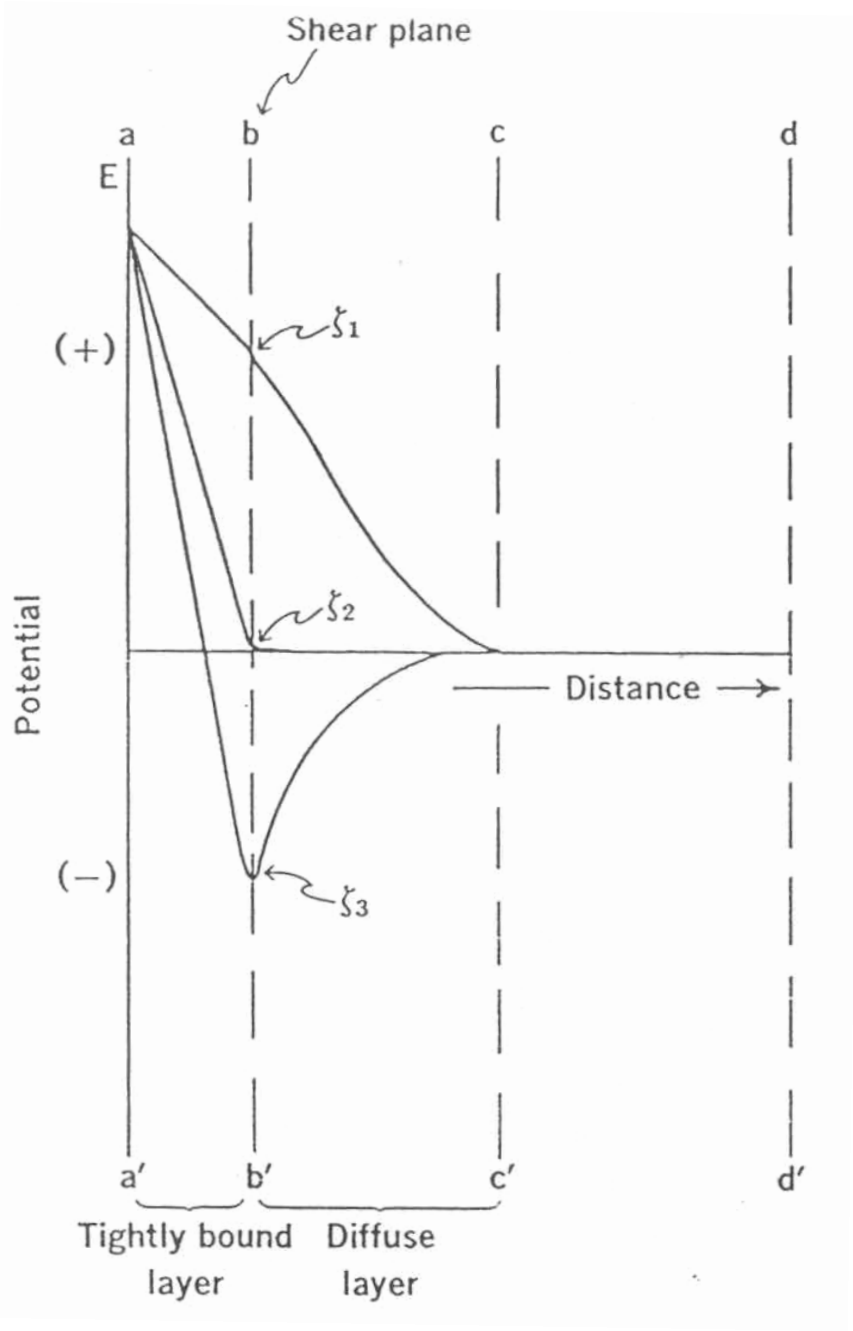


Figure 3: Potential energy curves for particle interactions in suspension. (from A. Martin, *J. Pharm. Sci.*, 50, 514, 1961).

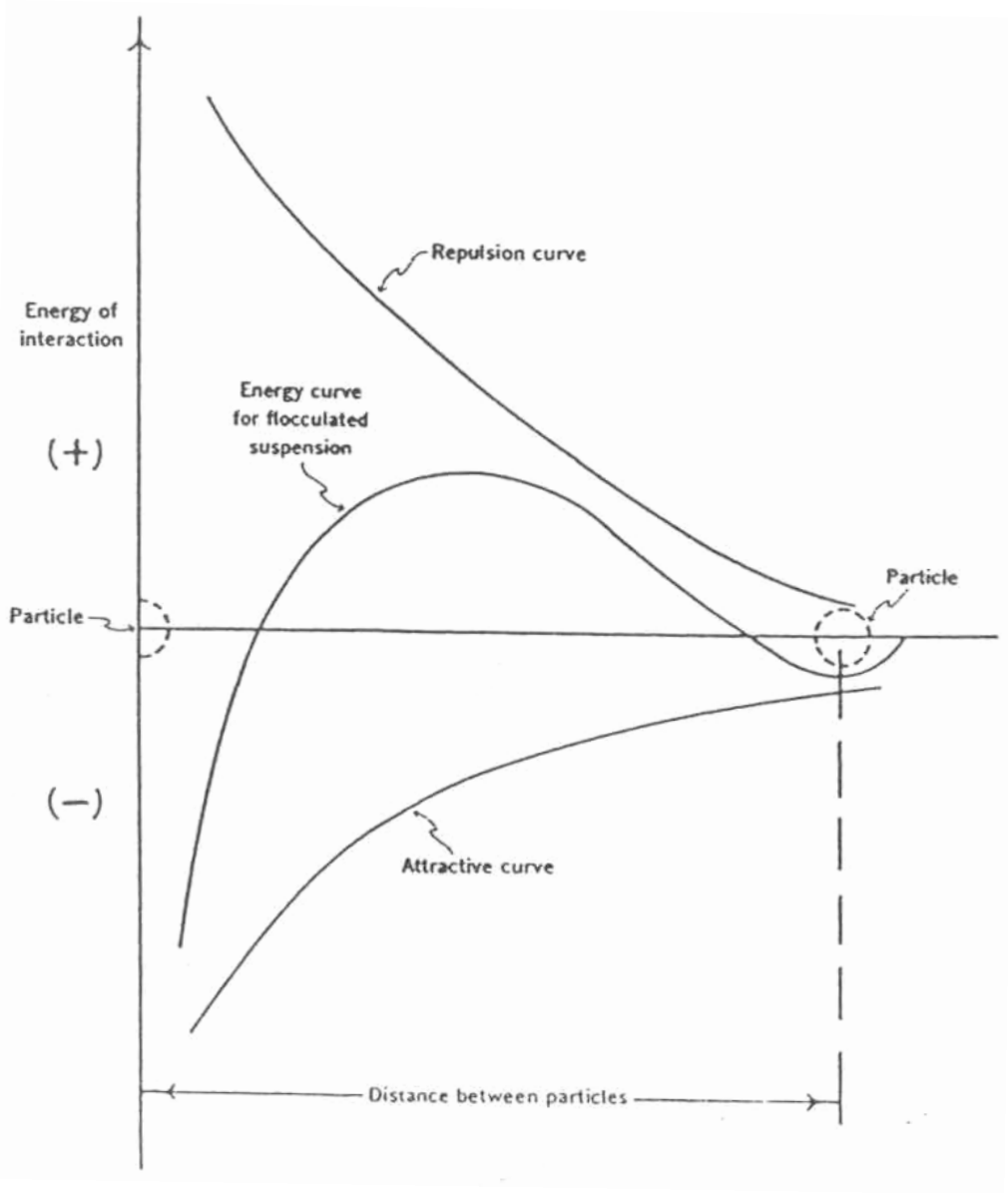


Figure 4: Sedimentation volumes produced by adding varying amounts of flocculating agent. Examples *b* and *c* are pharmaceutically acceptable.

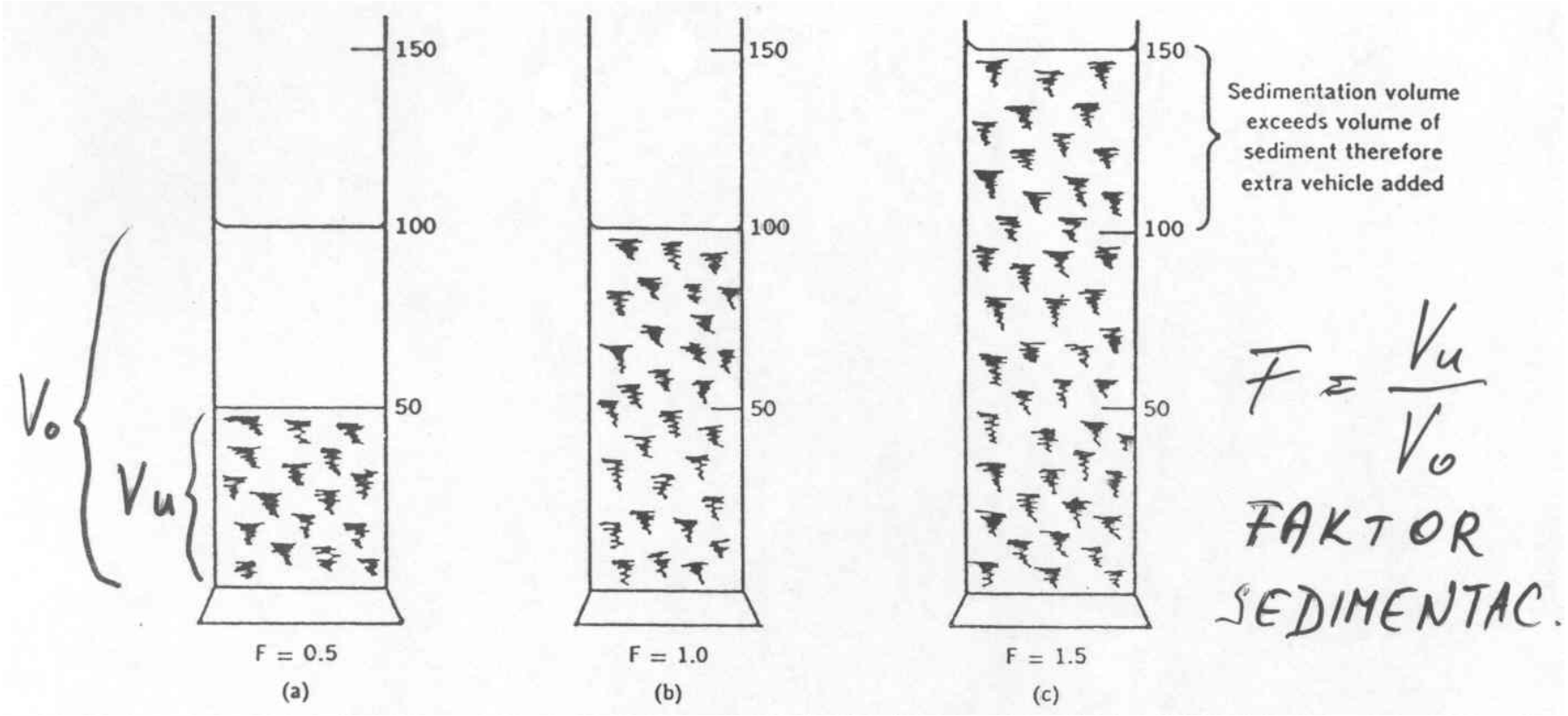
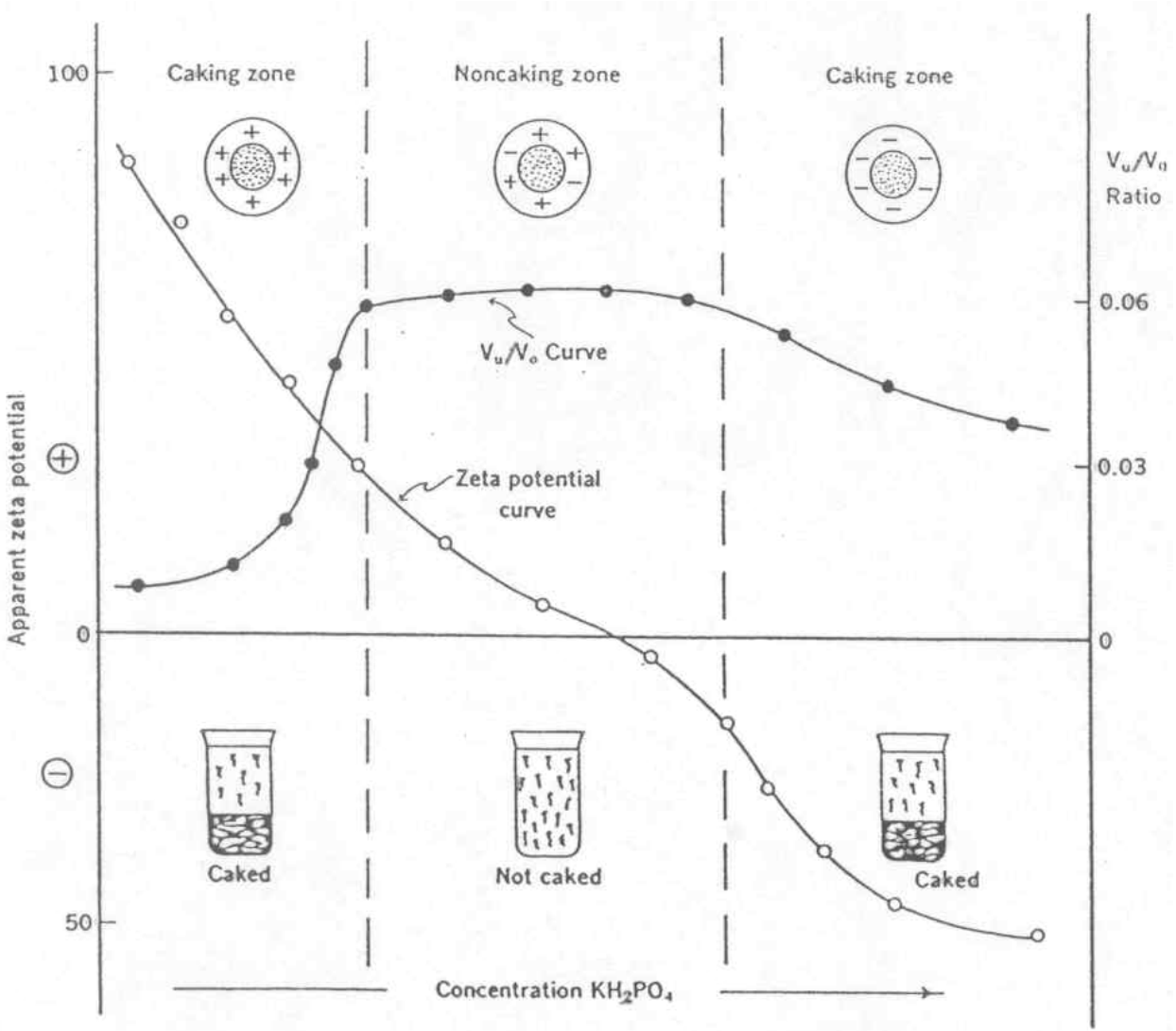


Figure 5: Caking diagram, showing the flocculation of a bismuth subnitrate suspension by means of the flocculating agent, monobasic potassium phosphate. (A. Martin and J. Swarbrick, in Sprowls, *American Pharmacy*, 6th Ed., Lippincott, Philadelphia, 1966, p. 205).



SUSPENZIJE

- vodne suspenzije – zdravilni pripravki (največ), μ velikosti
- fizikalna stabilnost: delci ne agregirajo in so enakomerno porazdeljeni
- velika površina delcev → površinska prosta entalpija → sistem je termodinamsko nestabilen

$$\Delta G = \gamma_{SL} \cdot \Delta A$$

γ_{SL} – površinska napetost (med tekočino in delci)
A – površina

Hidrofobni – hidrofilni delci
Stabiliziranje:
- ↑ viskoznost vehikla
- kontrolirana flokulacija: dodatek elektrolitov, surfaktantov, polimerov (del na molekule, ostanek verige – v topilo)

Schulze-Hardy rule – ↑ naboj elektrolita → večji efekt – hitrejše obarjanje

Organizem-kri – stabilnost suspenzij in μ (= 1/2 $\Sigma c \cdot z^2$)

KOLOIDI, KOLOIDNE RAZTOPINE

0,5 µm – 1 nm

- liofilni (organske molekule; želatina, inzulin, albumin...)

- liofobni (anorganski delci; zlato, srebro, žveplo, srebrov jodid...)

- asociacijski koloidi (amfifili, površinsko aktivne snovi, miceli – 50 in več monomerov, CMC)

Tyndall-ov efekt, Brownovo gibanje, difuzija, sedimentacija (Stokesov zakon); viskoznost, stabilnost – zeta potencial, liofobni

soli – termodinamsko nestab.; liofilni in asociac. soli – stabilni (prave razt.)

koacervacija: liofilni → liofobni

Donnan-ovo ravnotežje

R^- Na^+	Na^+	"Escaping tendency" enaka!!
Na^+ Cl^-	Cl^-	toplota iz ↑ toplega → hladno
znotraj	zunaj	
(inside)	(outside)	

1. $[Na^+]_i [Cl^-]_i = [Na^+]_0 [Cl^-]_0$

2. $[Na^+]_0 [Cl^-]_0$ ELEKTRONEVTRALNOST

$[Na^+]_i = [R^-]_i + [Cl^-]_i$

$$[Cl^-]_0^2 = ([Cl^-]_i + [R^-]_i)[Cl^-]_i = [Cl^-]_i^2 \left(1 + \frac{[R^-]_i}{[Cl^-]_i} \right)$$

$$\frac{[Cl^-]_0}{[Cl^-]_i} = \sqrt{1 + \frac{[R^-]_i}{[Cl^-]_i}}$$

Onkotski pritisk : osmotski pritisk

Schulze-Hardy pravilo → DLVO teorija

↑valenca ionov→ močnejše obarjanje