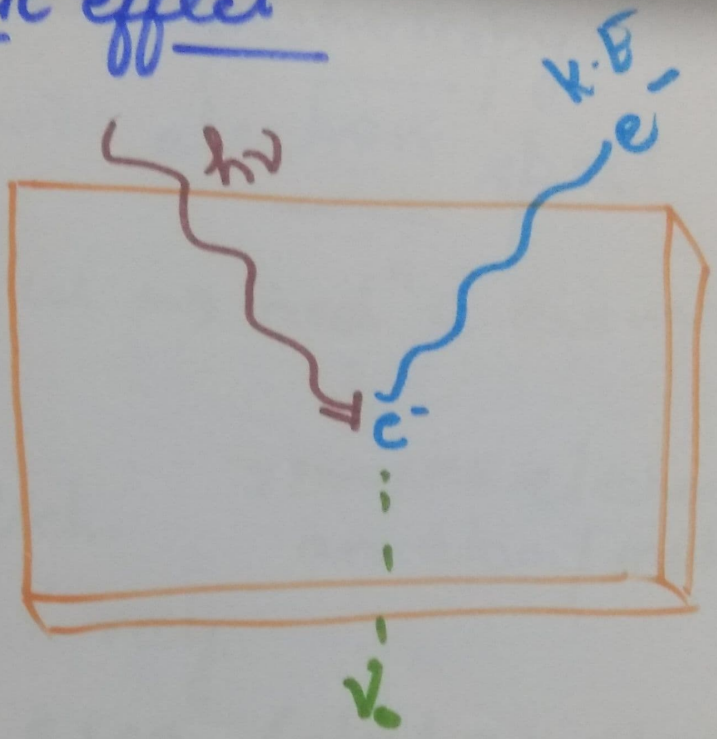
Photo electric effect



If $\nu < \nu_0$

↓

no e^- emitted

If $\nu > \nu_0$

↓

e^- will emit

K.E electron = $h\nu - h\nu_0$

= $E - E_0$

↓

K.E of emitted e^-

↓

Energy of incident photon

→ Energy rqd to remove an e^- from metal's surface

Photon electron spectroscopy

X-ray photo electron spect.

→ Technique ⇒ radⁿ C enough energy

↓

removes electron from an atom/molecule

→ surface tech.

→ Radⁿ → X-ray

→ Ad as ESCA (electron spectroscopy for chemical analysis)

→ provides chemical & elemental info state

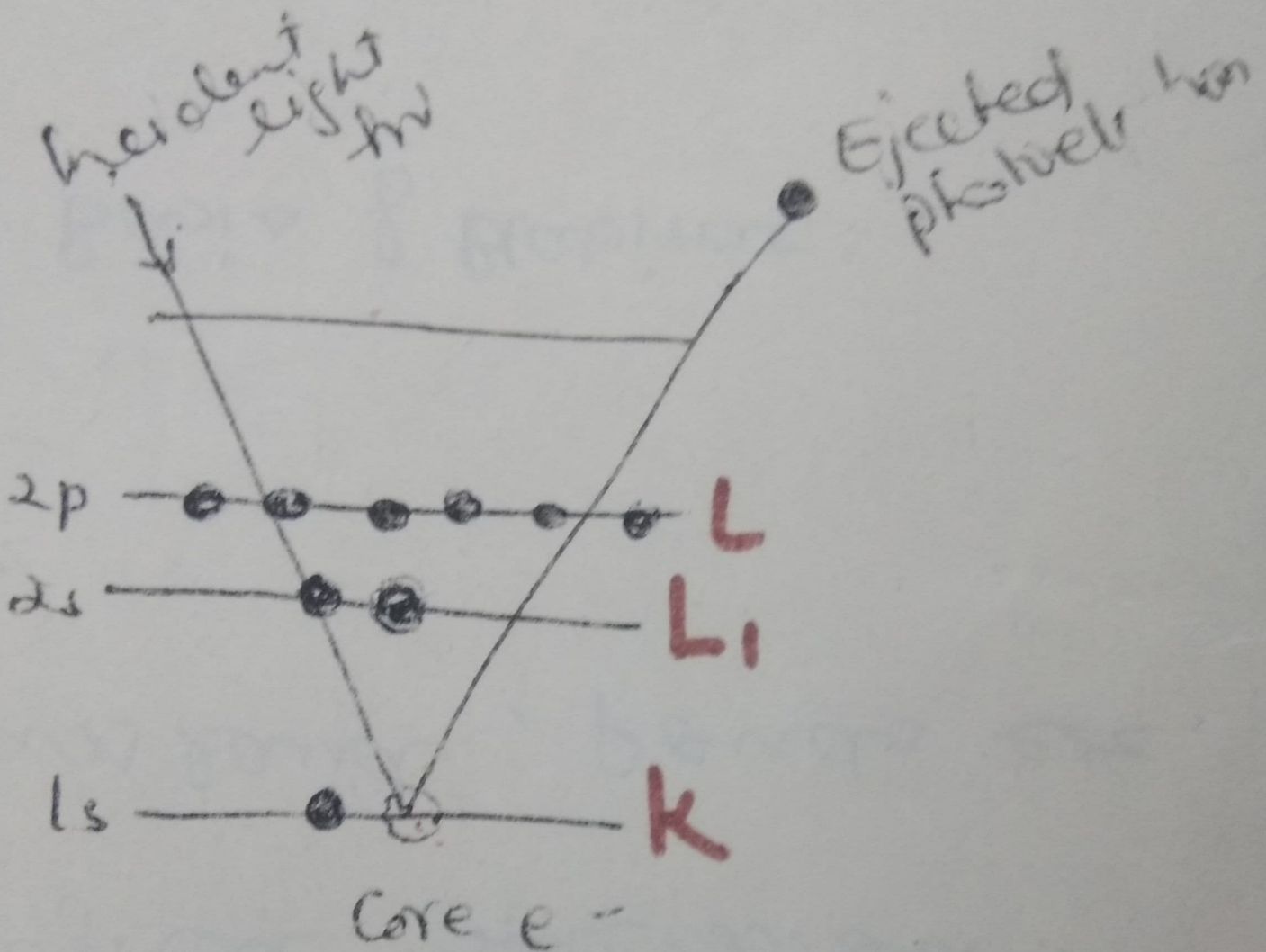
→ K.E of emitted e⁻ → characteristic of the element

$$K.E = h\nu - B.E - \phi$$

→ work function of spectrometer

↙ Incident photon energy

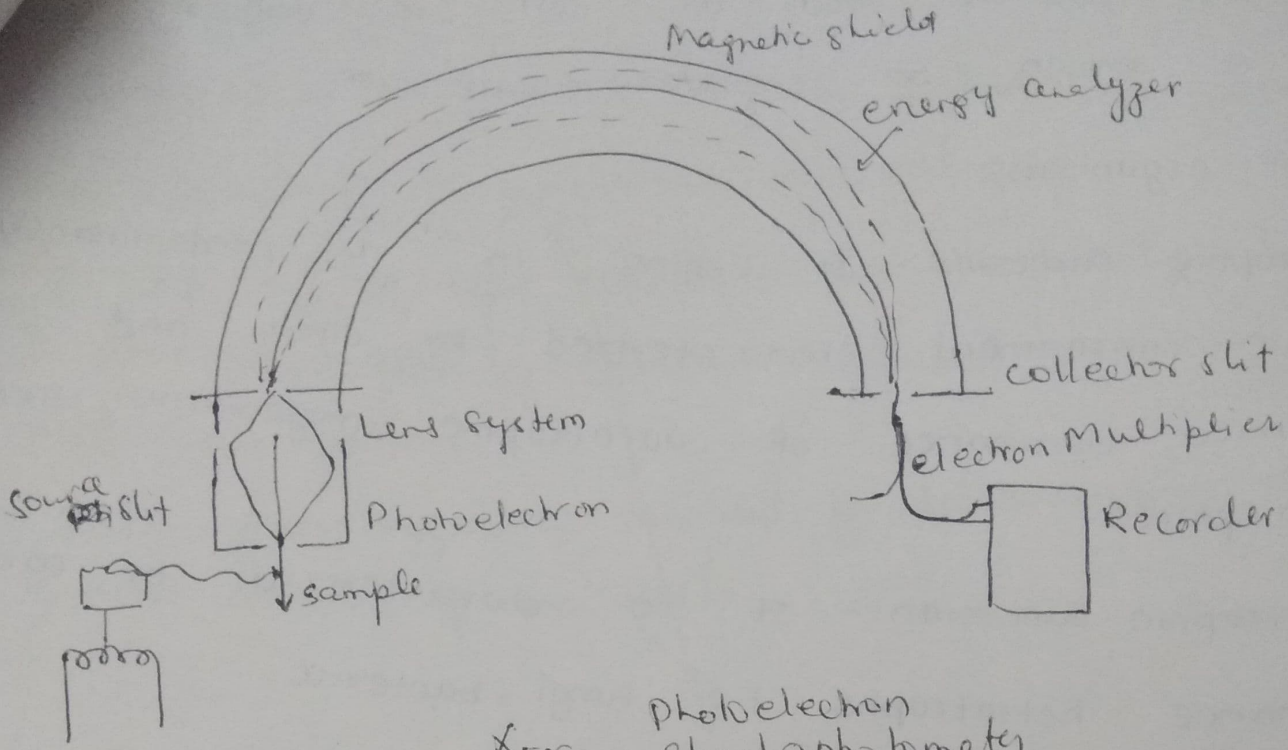
↓ Binding Energy of e⁻



X ray will emit core electron

Components :

1) Source of X-ray
2) UHV
3) Electron energy analyzer
4) Mag. field shielding
5) Electron detector



Photoelectron
X-ray spectrophotometer