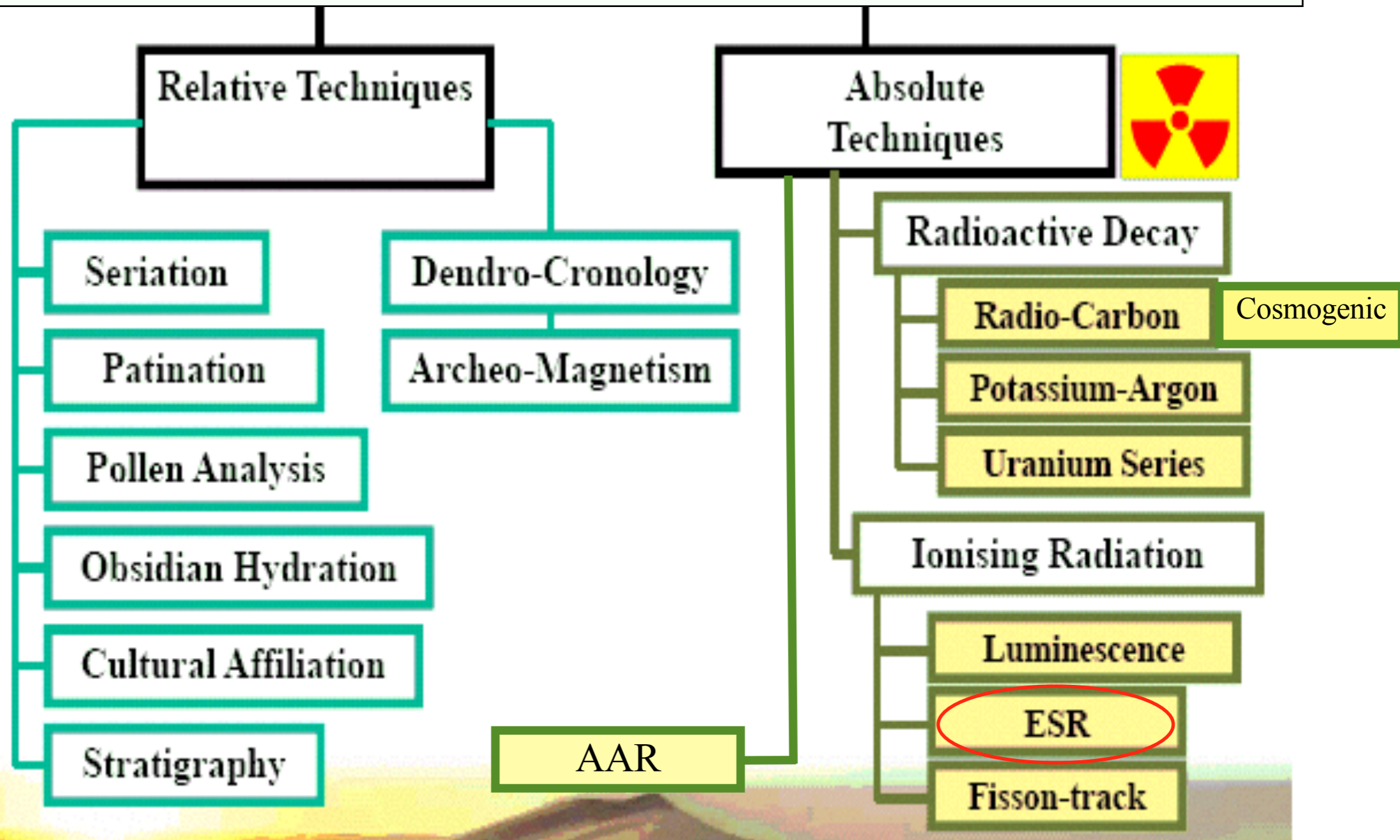


Advanced Analytical Methods in Bioarchaeology

Claudio Tuniz

Electron Spin Resonance Dating

Dating Techniques

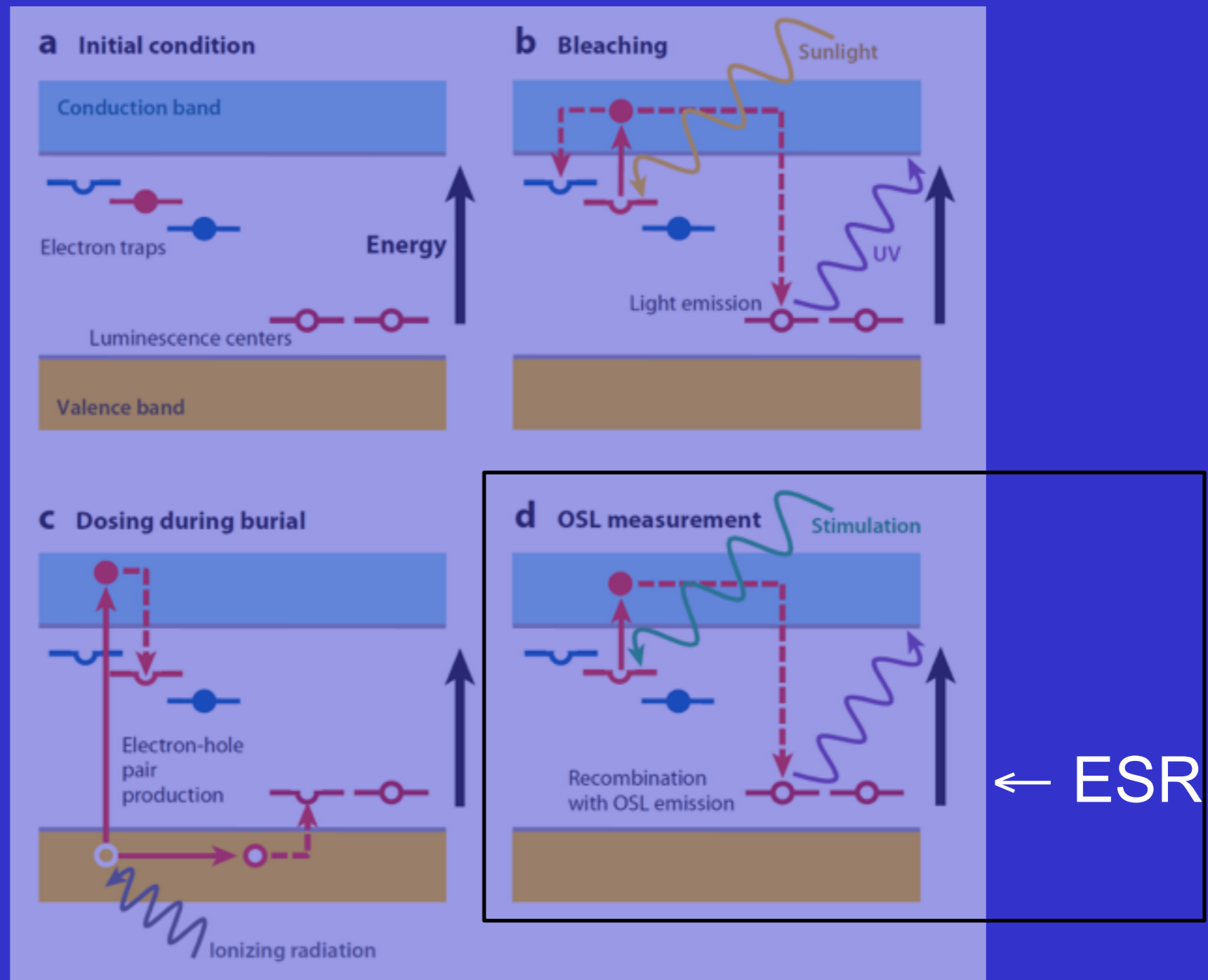


Energy band model

Excited state



Stable state



ESR instrument

- Basic components
 - electromagnet
 - microwave generator
 - electronic processing unit

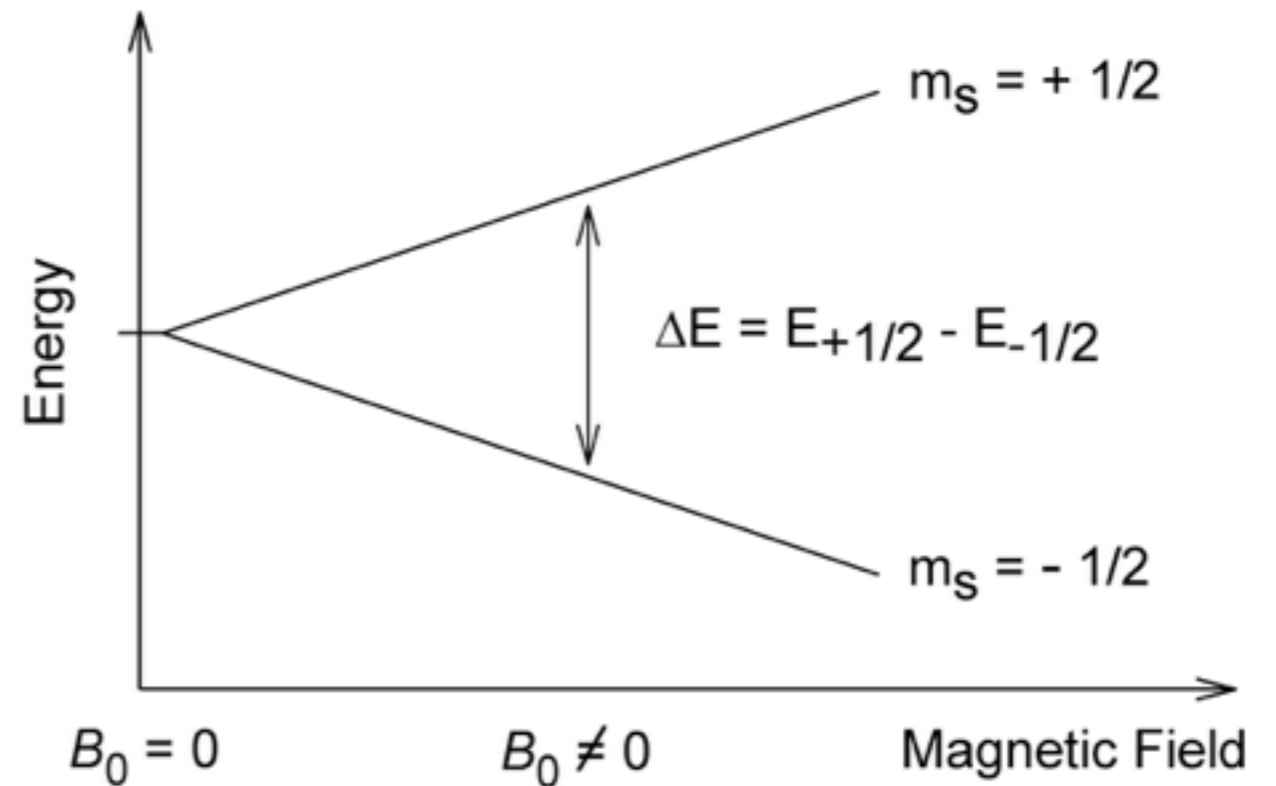
ESR measurement

- sample in cavity connected to microwave generator by wave guides, located between poles of magnet
- unpaired electrons generate magnetic moments



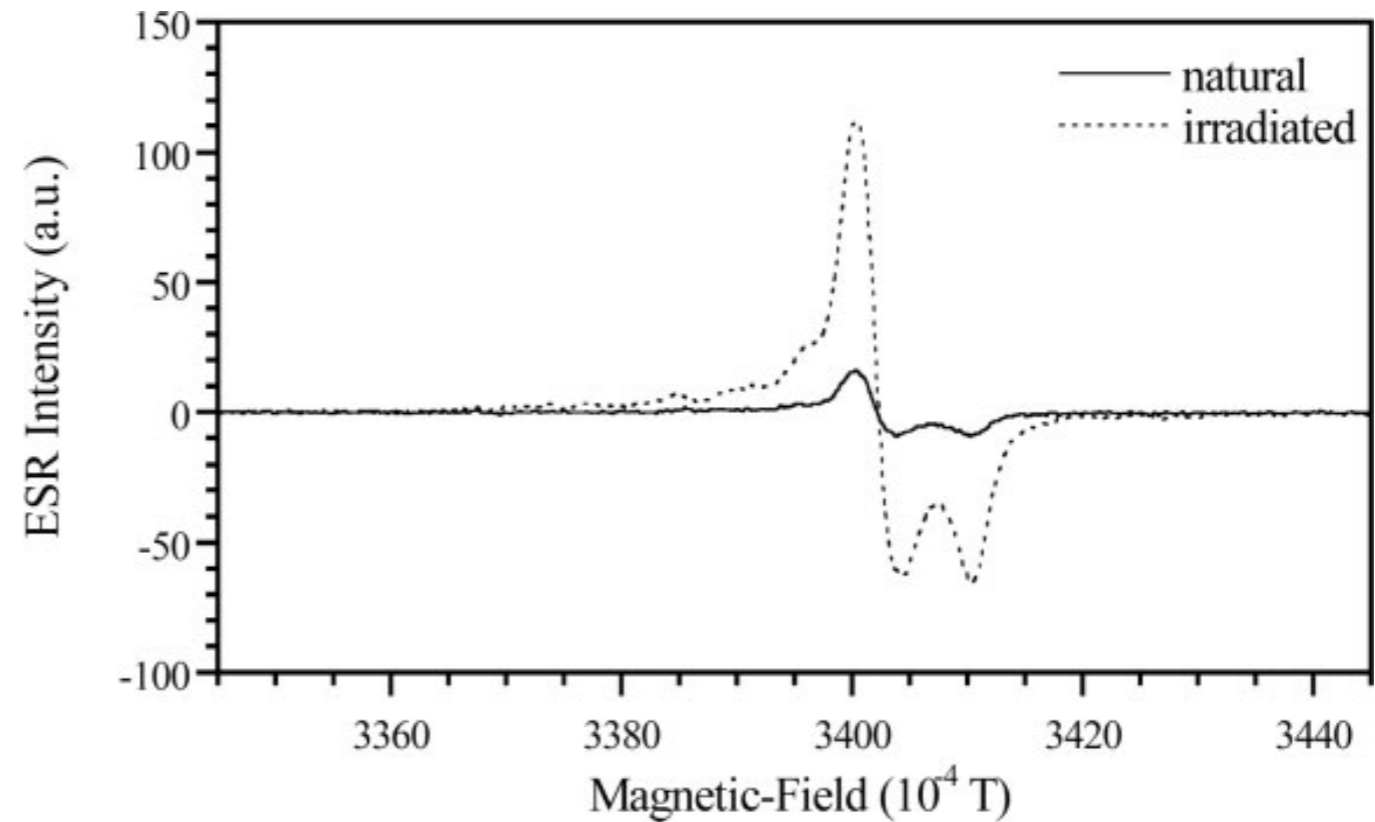
ESR measurement

- in external magnetic field: magnetic moment electron can assume two energy states, ground or excited
- Transfer of magnetic moment from lower to higher state by absorption of electromagnetic waves



ESR measurement

- absorbed microwave energy is directly proportional to number of paramagnetic centres (hence to the age of the sample)



- dose re

