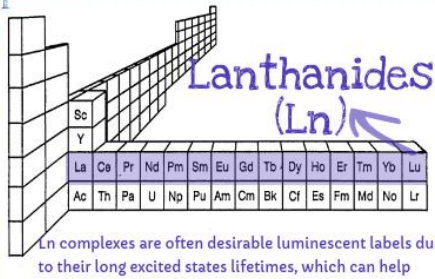
Luminescent Lanthanide complexes as biolabelling

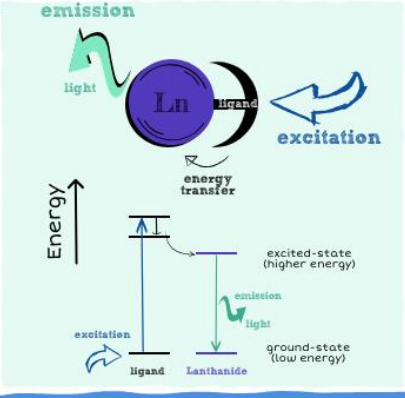
1



Ln complexes are often desirable luminescent labels due to their long excited states lifetimes, which can help separate the light signal from background processes, and thus effectively makes the images become brighter.

Luminescence is "a spontaneous emission of radiation from an electronically excited species".

2



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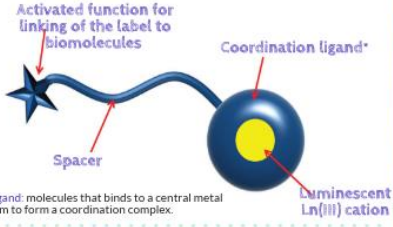
Our body fluid is composed of millions of different molecules, among which the important one for disease diagnosis may only be present at an infinitesimal proportion. Thus, a bio-label is necessary when you want to follow a biological process in vivo.

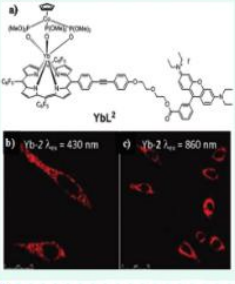
3 Luminescent labels

- ✓ Absorbs light efficiently
- ✓ Protects the Ln cation well by the ligand*
- ✓ High stability
- ✓ Compatible physicochemical properties with biological media
- ✓ An activated labelling function



*Ligand: molecules that binds to a central metal atom to form a coordination complex.

4 Ln labels for microscopy



Structure of the YbL2 complex

In vitro imaging of cells

REFERENCE

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[2] G.F.de Sa˜, O.L. Malta, C. de Mello Donega, Coordination Chemistry Reviews, 2000,196, 165–195

[3] Wikipedia, https://en.wikipedia.org/wiki/Luminescence

[4] https://www.ionicviper.org/class-activity/f-elements-lecture-material