

## Selenium and Tellurium Giving Light to Analytes

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### ABSTRACT

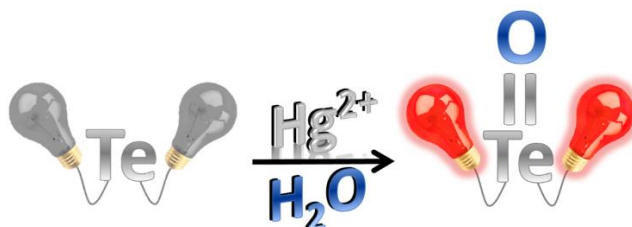
Selenium is a micronutrient essential to life playing important roles in many organisms regulating many biological processes, especially those related to oxidation/reduction events. There is an evolutionary theory related to these functions in which selenium assume a protagonist position, as the atom that replaces in biology, sulfur. Taking in account the fine balance between its essential and poisoning dose (in the order of microgram/day) confers to selenium the fame of “essential poison”.<sup>1</sup>

Tellurium, on the other hand, has only one known function in a biological organism, registered to date, as part of tellurocysteine and telluromethionine, and this occurrence is attributed to a sulfur source restriction.<sup>2</sup> Independent of the rare occurrence of tellurium in living organisms it shares, with selenium and sulfur, the high reactivity with oxygen and oxidant entities being much more prone to be oxidized than the other two heavier chalcogens of the family.

Molecular fluorophores are of crucial importance in many analytical fields and in biochemistry in particular, allowing the determination/recognition, as well as, quantification of singular analytes in a very efficient and sensible manner.

In this talk we will present and discuss the unique aspects of selenium and tellurium on the modulation of the fluorescence property of molecular probes on the recognition of analytes.

### GRAPHICAL ABSTRACT



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### REFERENCES

- 1) Reich, H. J.; Hondal, R. J. *ACS Chem. Biol.* **2016**, *11*, 821;
- 2) Ramadan, S. E.; Razak, A. A.; Ragab, A. M.; El-Meleigy, M. *Biol. Trace Elem. Res.* **1989**, *20*, 225;