

Scientific Talk on
Chemical Sensors for Speciation Studies
(16-08-2018)

PG Department of Chemistry organised a Scientific Talk on Chemical Sensors for Speciation Studies by Dr. A.V. Ramana Reddy, Scientist, BARC, Mumbai on 16th August 2018. In his talk he discussed the following topics

Chemical Speciation:

The term chemical speciation denotes to the formation of specific chemical forms of an element in the system, although in the context of environmental analytical chemistry the term differs in its minutiae among authors.

Chemical speciation of metals in environment, its relevancy to ecotoxicological studies and the need for biosensor development.

Speciation and Toxicity:

Metals in the environment are non-biodegradable. Upon entry to the environment, they undergo a range of changes in their physicochemical forms. They get partitioned into different physicochemical forms and phases. Among these the common forms are colloidal, chelated and free ionic or combined with other chemical groups.

Speciation and Bioavailability:

The two specifics, speciation and bioavailability, are frequently interlinked because the speciation of the metal is often related to the bioavailability of metals. Furthermore, in considering the interaction of trace metal with living organisms, three broad areas of concern can be identified: i) metal speciation in the external environment, ii) metal interaction with the biological membrane

and iii) metal partitioning within the organism and the accompanying biological effects . The biological response (BR) of organisms is more or less proportional to the activity of the free metal ion.

Chemical Models, Bio-Reporters and Biosensors The system parameters such as pH, redox potential, ionic strength, organic matter and clay strongly influence the bioavailability of metals. As indicated earlier the susceptibility of metals to the system parameters emphasizes the importance of defining the chemical parameters of metal-containing systems.



