

Selections for Power Point presentations. November

I. In the news/press:

- 1) Tragic Chemistry and Physics of Ammonium Nitrate explosives (West Texas, Beirut)
- 2) Book/Movie: Radium Girls. Why the Miracle Element glows and why it turned deadly.
- 3) Movie: Radioactive: Marie Curie, the chemistry and the separation sciences behind her Discoveries
- 4) Lead poisoning: The coordination chemistry that governs Chelation Therapy
- 5) Lithium batteries and fires. How/why do they happen? How can they be prevented?

II. Metals in Biology and in Medicine

- 6) Diagnostic Agents: Technetium Imaging Agents
- 7) MRI and the physico-chemical properties required for imaging agents.
- 8) Use of Fluorine compounds in Positron Emission Tomography and use in personalized medicine
- 9) What is methemoglobinemia? Who were the Blue People of Kentucky?
- 10) Hemoglobin and Sherlock Holmes: Specificity in Binding of Diatomic Ligands to Iron.
- 11) Zinc: Silent metal and Essential micronutrient.
- 12) Chelators for Uptake of Micronutrients in Plants
- 13) Natural Nitrogen Fixation: Nitrogenase Enzymes FeMoco, FeVco, FeFeco. Why three?
- 14) Cis Platin: Story/Logic of Its Discovery and How it works.
- 15) Ferroquine, a ferrocene derivative of chloroquine and its anti-malarial and anti-tumor properties. <https://www.nature.com/articles/s41598-017-16154-2>
- 16) Iron Homeostasis, Anemia and Resultant Diseases

III. Catalysis

- 17) The Haber/Bosch Process
- 18) The Fischer-Tropsch Process
- 19) The Monsanto-Acetic Acid Process
- 20) AcetylCoA Synthase: Nature's analogue to the Monsanto -acetic Acid Process
- 21) Noble Metals in Catalytic Converters
- 22) Palladium Catalyzed Cross Coupling Reaction

IV. Devices

- 23) Rare Earth Metals: Why are they so suitable for applications in Cell Phones?
- 24) Inorganic Chemistry in Solar Panels