03. Photography with Iron Salts

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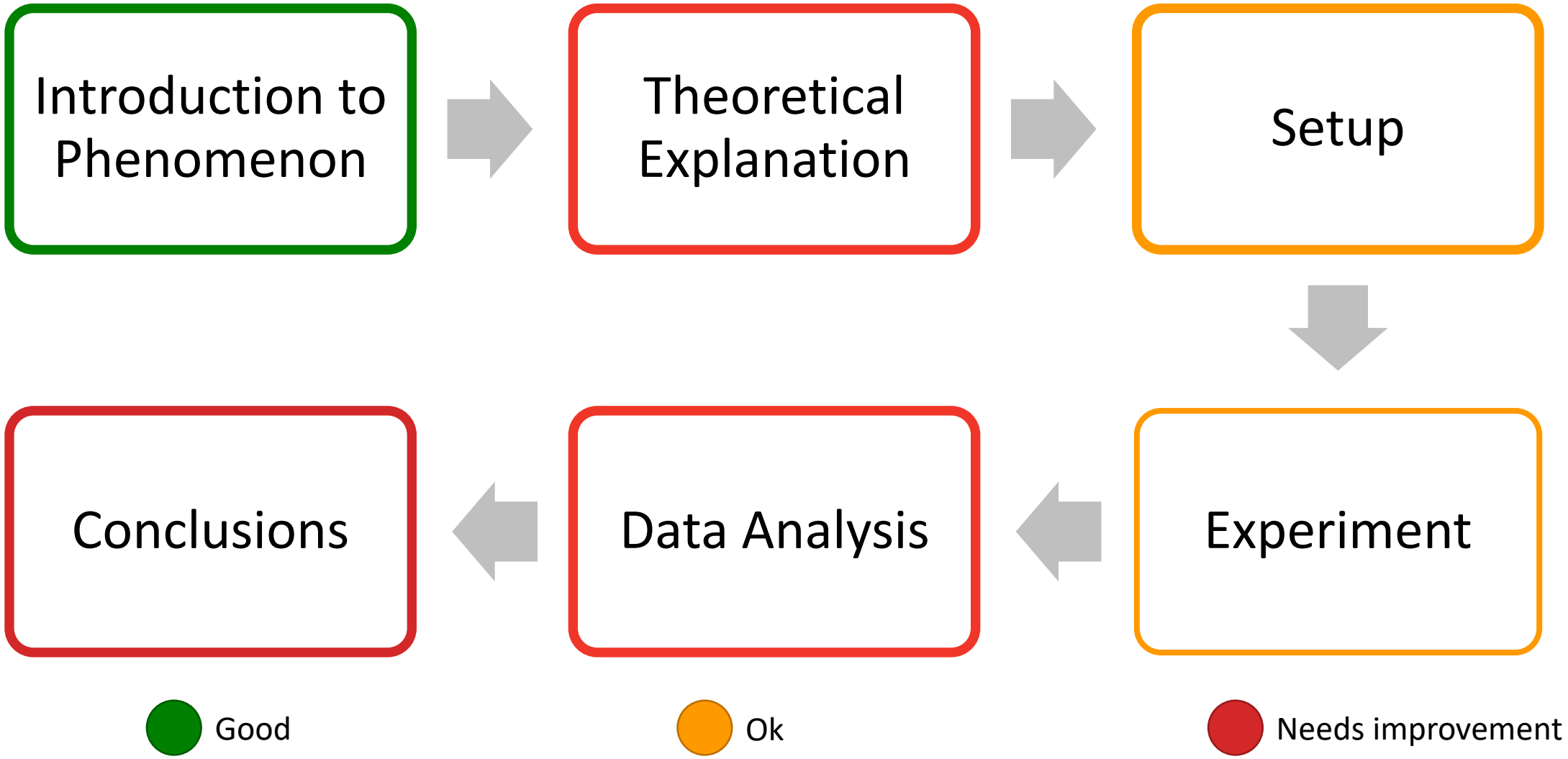
Opponent:	Elizaveta Kolokolnikova	Team Russia-Element
Reviewer:	Margot Lurie	Team Switzerland

Task

Mix 10 parts of ferrous oxalate (25% aqueous solution), 7 parts of concentrated ammonia solution, and 20 parts of saturated solution of oxalic acid to produce a photosensitive iron complex. Prepare separately a 25% solution of potassium ferricyanide. A sheet of paper saturated with a mix of these two solutions can be exposed to light and produce an image. What other iron salts are photosensitive? Produce photographs using various approaches and various iron salts, and investigate the role of relevant parameters.

- Using iron salts
- Light exposure
- Produce photographs

Outline of Report



Theory

- Potassium ferricyanide
- No justification for hypotheses
- No chemical equation
- No explanation of why the complex is photosensitive
- Lacking relationship between theory and conclusions
- Said the iron salt isn’t photosensitive??

Statement of Opponent

- Asked about photosensivity
- Agreed that iron salt is not photosensitive??
- Did not pick up on:
  - Lack of image produced
  - Green strips being produced instead of blue
- Pointed out weakness in chemical equations
- Could not give explanation as to why iron salts are photosensitive

Performance

Reporter

+ Multiple experiments

– No visual representation: graphs
– No actual images produced: only strips
– Specific Theoretical explanation – said iron salt isn't photosensitive
– Measurement explanation
– No Prussian Blue, just green.

Opponent

+ Talked about missing graphs
+ Recognized weakness in chemical equations

– Agreed that iron salts are not photosensitive
  – Lacking theoretical understanding

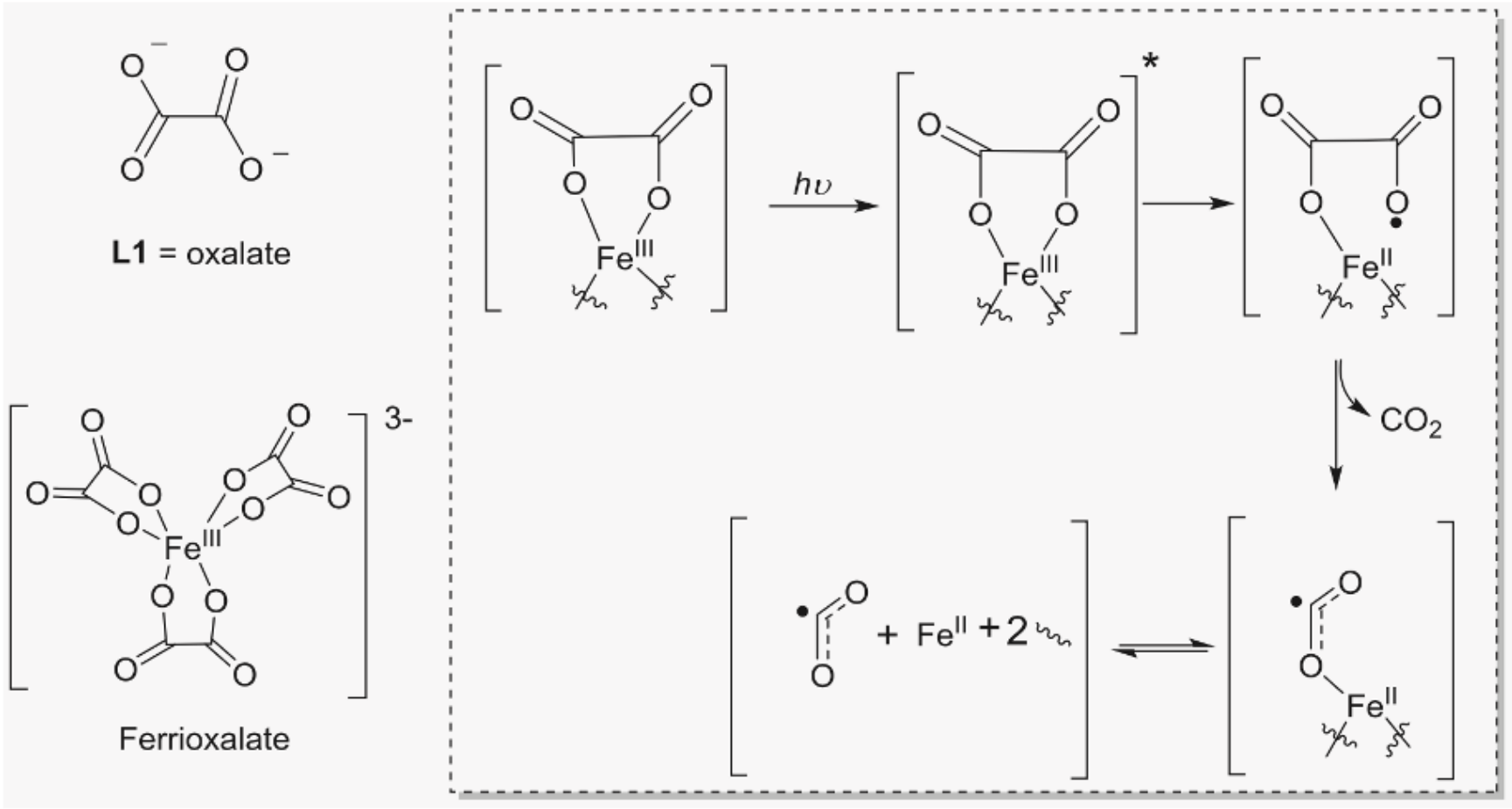


Fig. 1. Proposed pathways for photo-induced ligand degradation of ferrioxalate. For clarity, two of the oxalate ligands are omitted [36,38].