

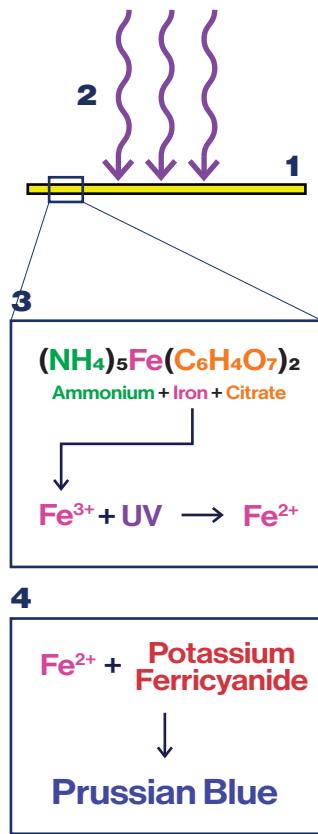
CYANOTYPES

Cyanotypes?

Developed in 1842 by Sir John Frederick Herschel and used by Anna Atkins in 1843 to publish the first photographically illustrated book, cyanotypes rely on the reaction between two iron compounds, typically **ferric ammonium citrate** and **potassium ferricyanide**.

When exposed to UV light, these compounds react to form insoluble ferric ferrocyanide (Prussian blue), creating the characteristic blue color, with the unexposed areas remaining soluble and easily rinsed away, leaving behind the cyanotype image.

The Chemistry: Explained



- 1 The fabric or paper is first coated with a mixture of **ferric ammonium citrate** ($(\text{NH}_4)_5\text{Fe}(\text{C}_6\text{H}_4\text{O}_7)_2$) and **potassium ferricyanide** ($\text{K}_3[\text{Fe}(\text{CN})_6]$).
- 2 **Ultraviolet rays** (high energy) hits the coated fabric or paper.
- 3 When the **iron(iii)** (Fe^{3+}) gets excited by the **UV rays**, it undergoes a redox reaction, gaining an electron and turning in to **iron(ii)** (Fe^{2+}).
- 4 The **iron(ii)** is then able to react with the **potassium ferricyanide**, forming the insoluble **Prussian blue** ($\text{Fe}^{\text{III}}_4[\text{Fe}^{\text{II}}(\text{CN})_6]_3$).
- 5 The fabric or paper can now be rinsed with water to wash away all the chemicals except for the insoluble **Prussian blue**, stopping all further reactions.