

# Blue Pigments

Paint is a mixture of **pigment** and binder. Pigments are colored inorganic compounds, frequently containing metal ions.



Different metal ions may produce similar colors.

There are many different blue pigments that contain different metal ions, such as:

- Egyptian blue ( $\text{CaCuSi}_4\text{O}_{10}$ )
- Verdigris ( $\text{CH}_3\text{COOH}$ )
- Prussian Blue ( $\text{Fe}_7(\text{CN})_{18}$ )
- Cobalt Turquoise ( $\text{CoAl}_2\text{O}_4$ )



Egyptian Blue

Detail of Coffin of a Priestly Official  
Egypt, 1075-945 BC  
MCCM 1999.001.013A



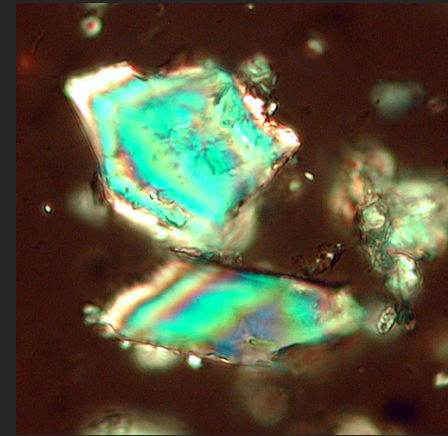
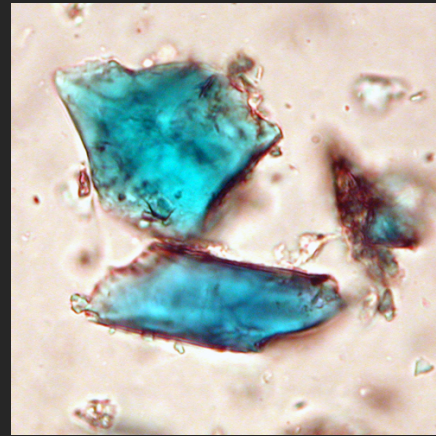
Prussian Blue

Egungun Mask Ensemble  
Yoruba, late 19<sup>th</sup> AD  
MCCM 1994.004.501

## Pigment Analysis

Pigments can be identified by a variety of techniques, such as:

- appearance of particles under polarized & UV light
- infrared luminescence
- elemental composition
- bonds between elements



Azurite under plane polarized light (r) and with crossed polarization filters (l).



Infrared luminescence of Egyptian Blue.



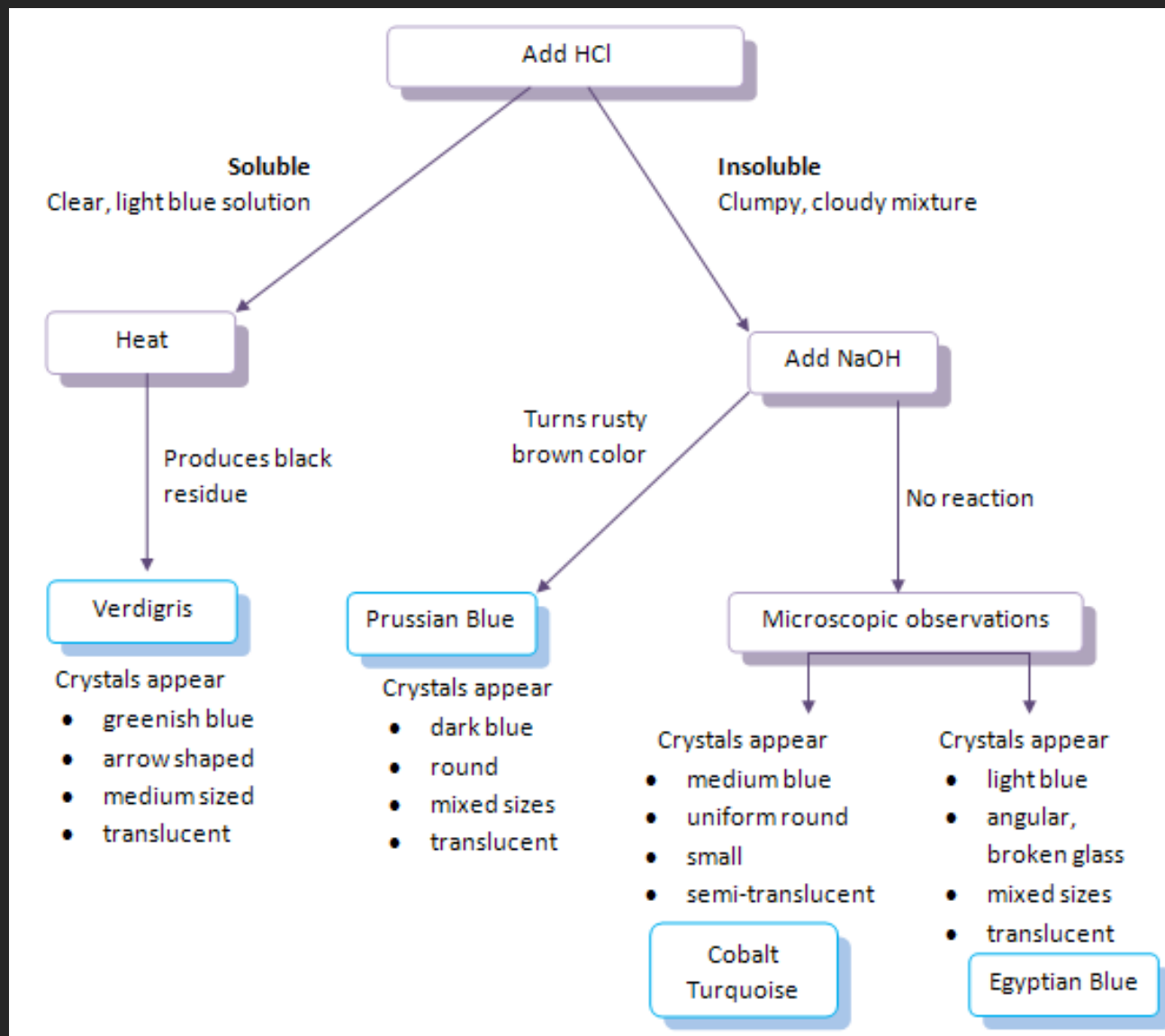
# Pigment Identification

Pigments can also be identified by their chemical and physical characteristics, such as:

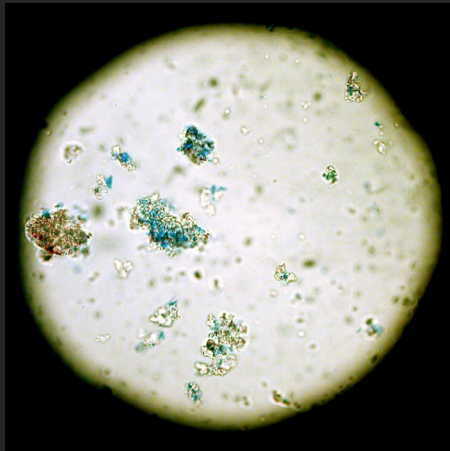
- solubility
- response to pH change
- response to heat
- size, shape, and color of pigment particles



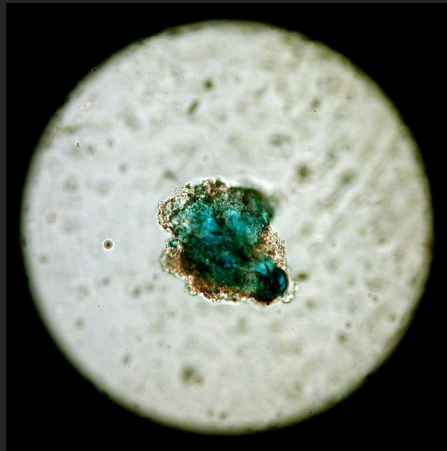
# Pigment Identification



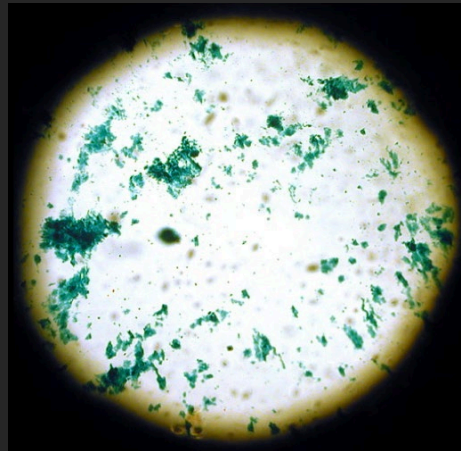
## Four blue pigments magnified at 40x



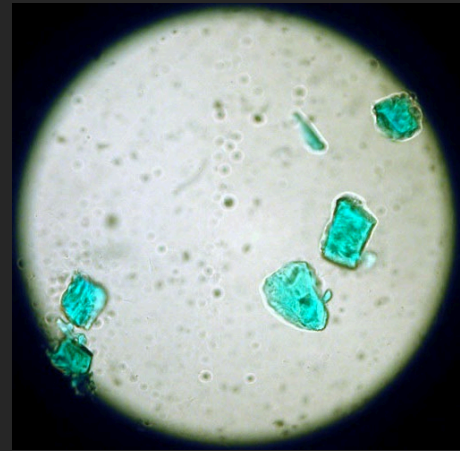
Cobalt Blue



Egyptian Blue



Prussian Blue



Verdigris