

3.6.2024

# Progetto DIAGNOSE

DIAGnostica Non InvaSiva e conservazione di dagHerrotipi e altri materiali fotografici

**Museo Galileo**

Piazza dei Giudici 1  
Firenze

## Giornata di studio sulle tecnologie laser e altri metodi innovativi per la caratterizzazione e la conservazione dei materiali fotografici e d'arte moderna

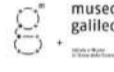


Regione Toscana

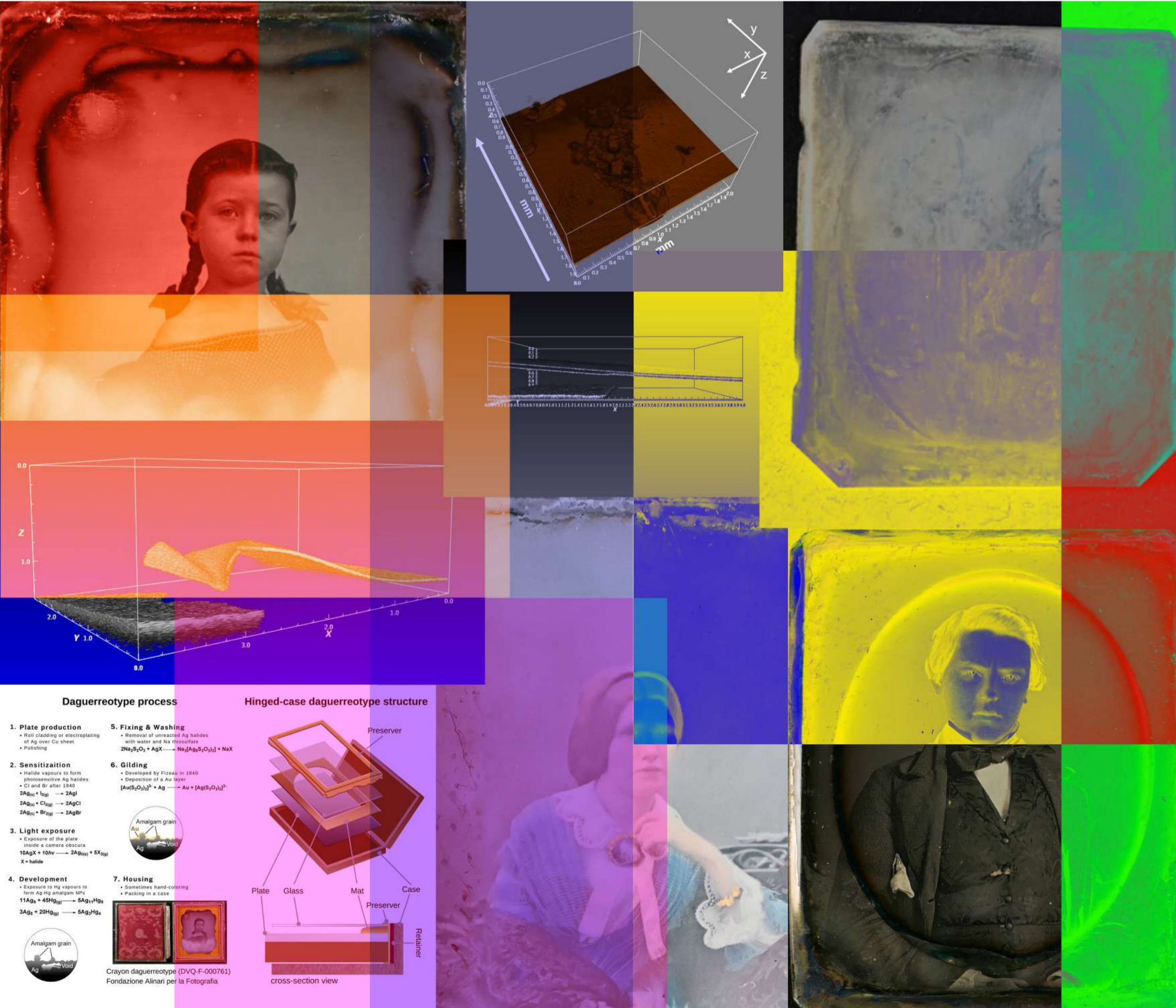
GIOVANI SI



CNR-INO



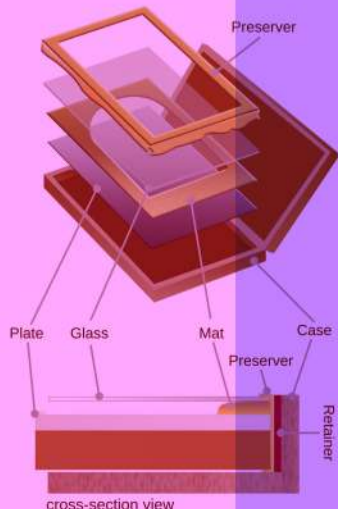
ELEN



### Daguerreotype process

- 1. Plate production**
  - Roll cladding or electroplating of Ag over Cu sheet
  - Polishing
- 2. Sensitization**
  - Halide vapours to form photosensitive Ag halides
  - Cl and Br after 1840
  - $2Ag_{(s)} + I_{2(g)} \rightarrow 2AgI$
  - $2Ag_{(s)} + Cl_{2(g)} \rightarrow 2AgCl$
  - $2Ag_{(s)} + Br_{2(g)} \rightarrow 2AgBr$
- 3. Light exposure**
  - Exposure of the plate inside a camera obscura
  - $10AgX + 10h\nu \rightarrow 2Ag_{(s)} + 5X_{(g)}$
  - X = halide
- 4. Development**
  - Exposure to Hg vapours to form Ag-Hg amalgam NPs
  - $11Ag_{(s)} + 48Hg_{(g)} \rightarrow 5Ag_{11}Hg_8$
  - $3Ag_{(s)} + 20Hg_{(g)} \rightarrow 5Ag_3Hg_4$
- 5. Fixing & Washing**
  - Removal of unreacted Ag halides with water and Na thiosulfate
  - $2Na_2S_2O_3 + AgX \rightarrow Na_2[Ag_2S_2O_3] + NaX$
- 6. Gilding**
  - Developed by Fizeau in 1840
  - Deposition of a Au layer
  - $[Au(S_2O_3)_2]^- + Ag \rightarrow Au + [Ag(S_2O_3)_2]^-$
- 7. Housing**
  - Sometimes hand-coloring
  - Packing in a case

### Hinged-case daguerreotype structure



Crayon daguerreotype (DVQ-F-000761)  
Fondazione Alinari per la Fotografia