

# “THE BEST PREPARATION OF SMALT”? A LASTING HONEY COATING ON SMALT PARTICLES



PAUL J.C. VAN LAAR\*, DOMINIQUE M.E. THIES-WEESE, THIJS HAGENDIJK, MAARTJE STOLS-WITLOX, GERT JAN VROEGE

## 1. BACKGROUND : SMALT EXPERIMENTATION

- **Smalt** is a finely ground blue-coloured glass that was used as a painter's pigment
- Artists were aware that smalt was **difficult to handle** and **prone to discolouration** when used in oil paint.

• Historic sources reveal **experimentation** among artists:

- » Alternative binding media
- » No binding media (“strewing smalt”)
- » Specific pigment mixtures (e.g. lead white)
- » **Alternative natural grinding media**



## 2. EIKELBERG'S (1663-1738) ERVARENIS

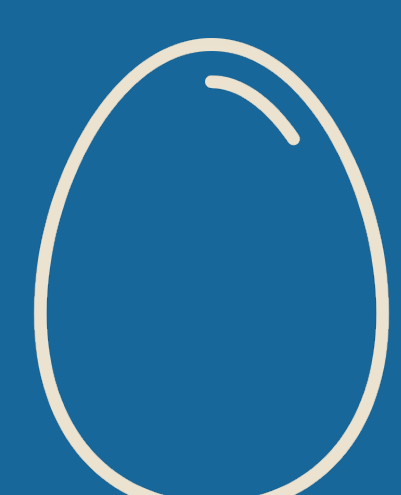


- Unpublished Dutch manuscript on the art of painting
- “*Ervarenissen*” that describe experiments in his studio
- 1701: **grinds smalt** with “**good, white honey**”



## 3. OTHER PECULIAR GRINDING MEDIA

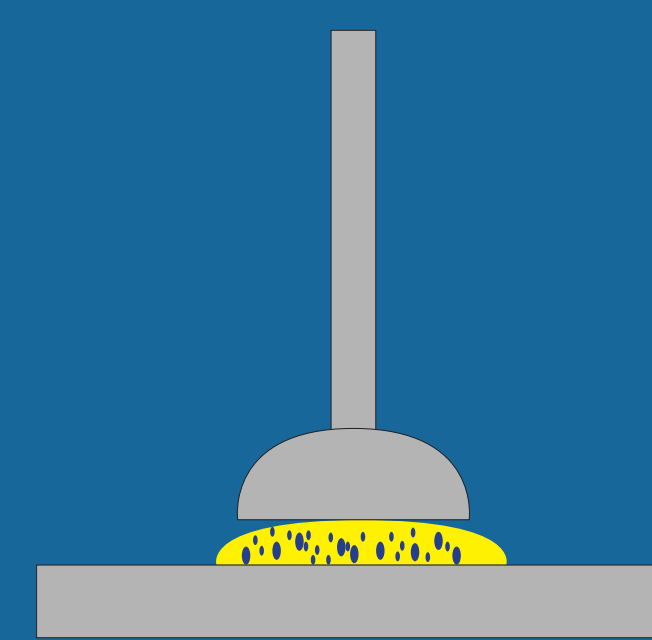
- Pseudo-Savonarola, ~1535: Smalt and **milk**
- MS2265 (Casanatense, Roma), 14th century: *ismalto* and **egg**
- For other pigments: white wine, vinegar, urine etc.



## 4. RECONSTRUCTING EIKELBERG'S EXPERIMENT

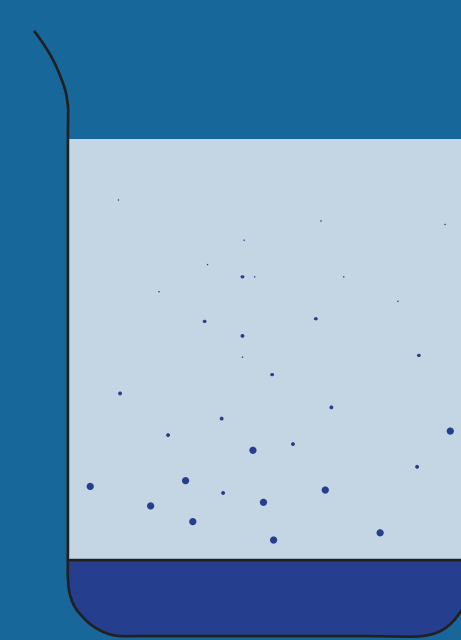
- Eikelenberg describes the following:
  - » **Grinding for upwards of an hour** (“ruym een uur”)
  - » **Washing the pigment** several times to remove the honey
- He remarks that “this is **the best preparation of smalt** that [he has] known until now.”
- **Reconstructions** were compared with a **control group** ground with water

### GRINDING



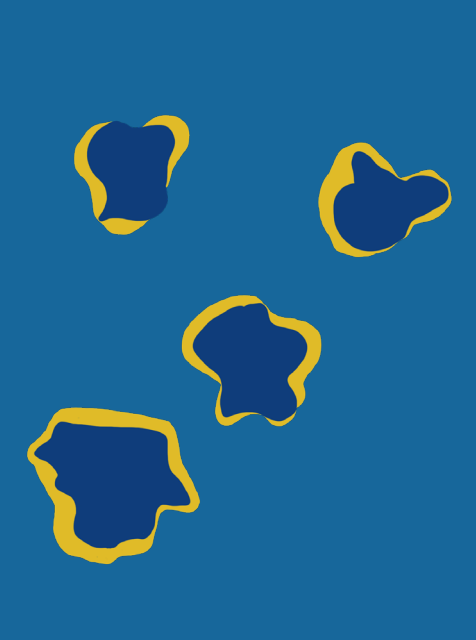
- In **honey or water**
- 2 variations: 8 or 60 min

### WASHING



- Repeated **3 times**
- 300mL, control with 2 L

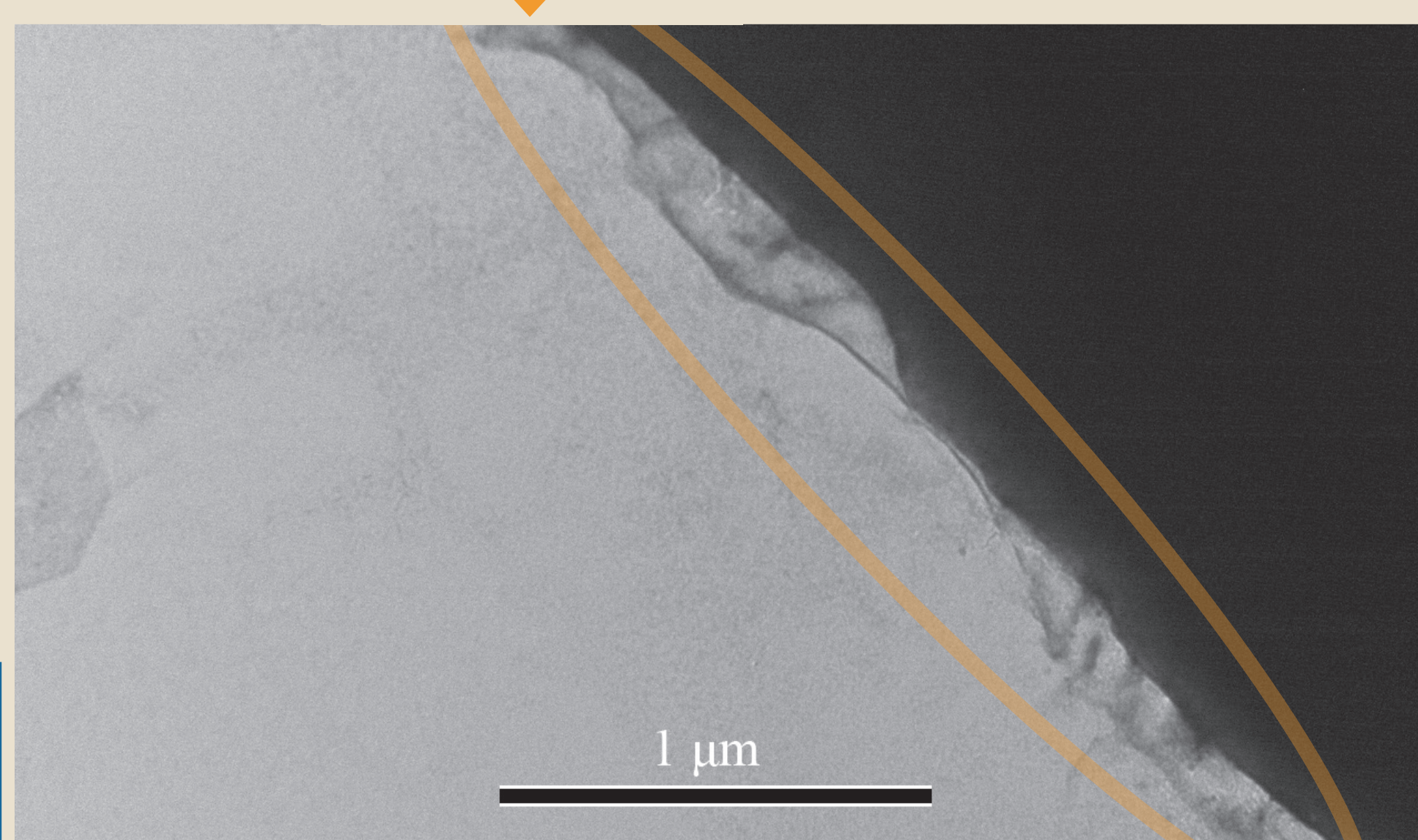
### FINAL PIGMENT



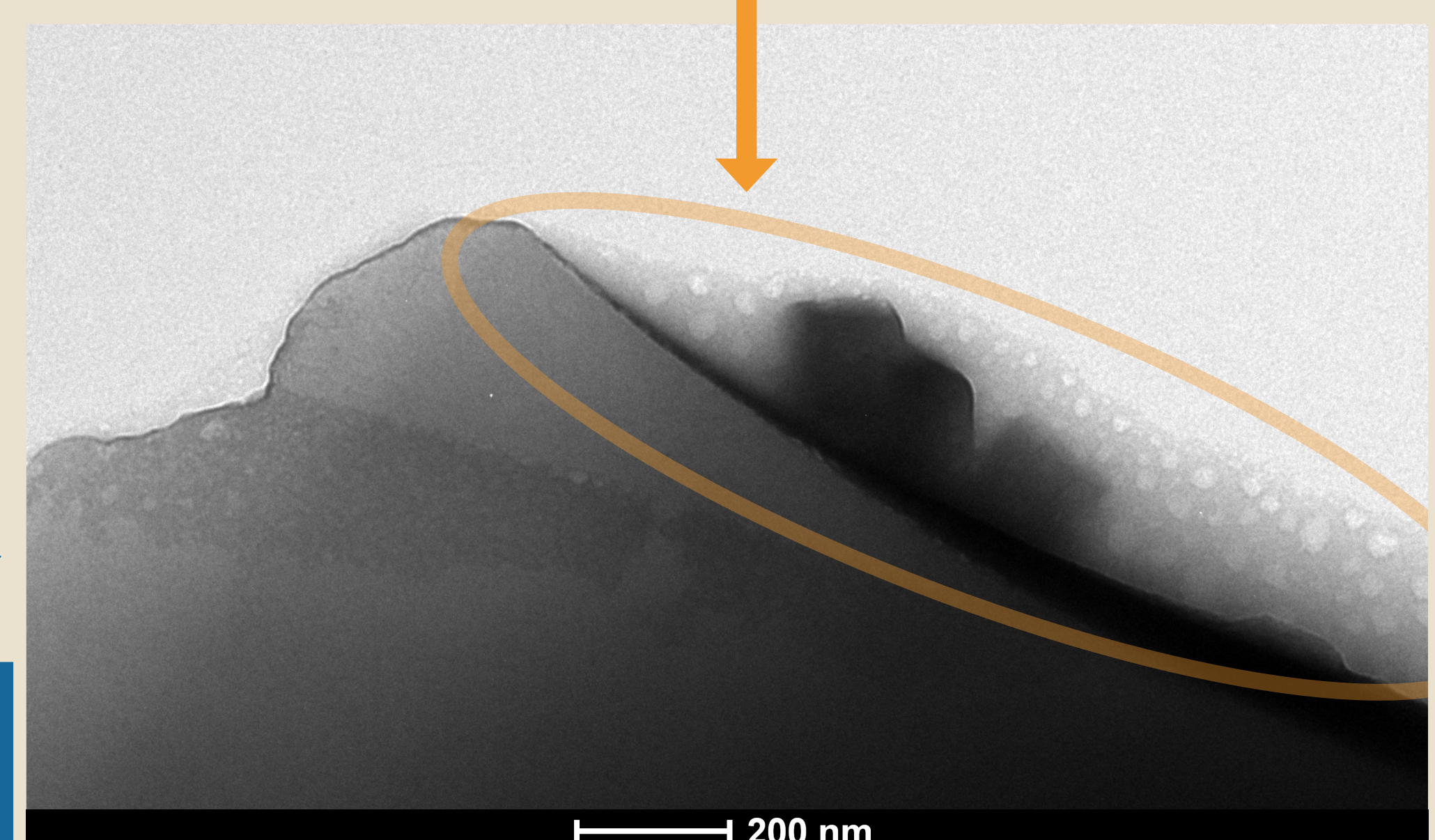
- Dried and analysed

## MAIN FINDING

DESPITE EXTENSIVE WASHING, A LASTING **HONEY COATING** IS DETECTED ON THE **SMALT PARTICLES**



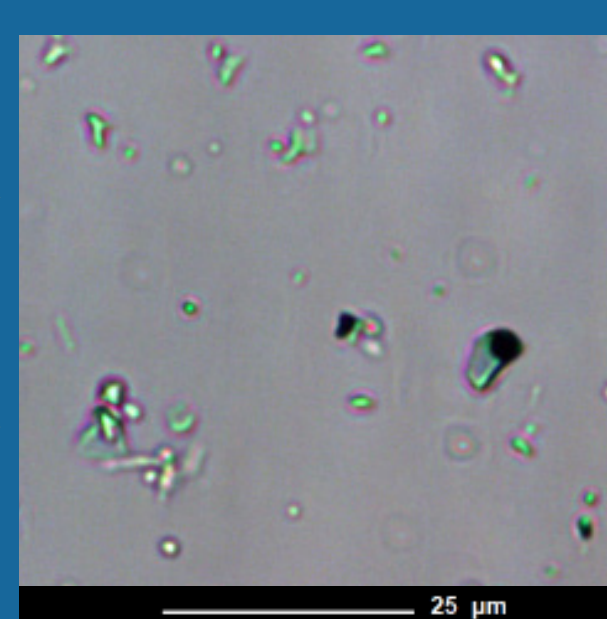
TEM micrograph of the final pigment after washing. Sample treated with Uranyl Acetate



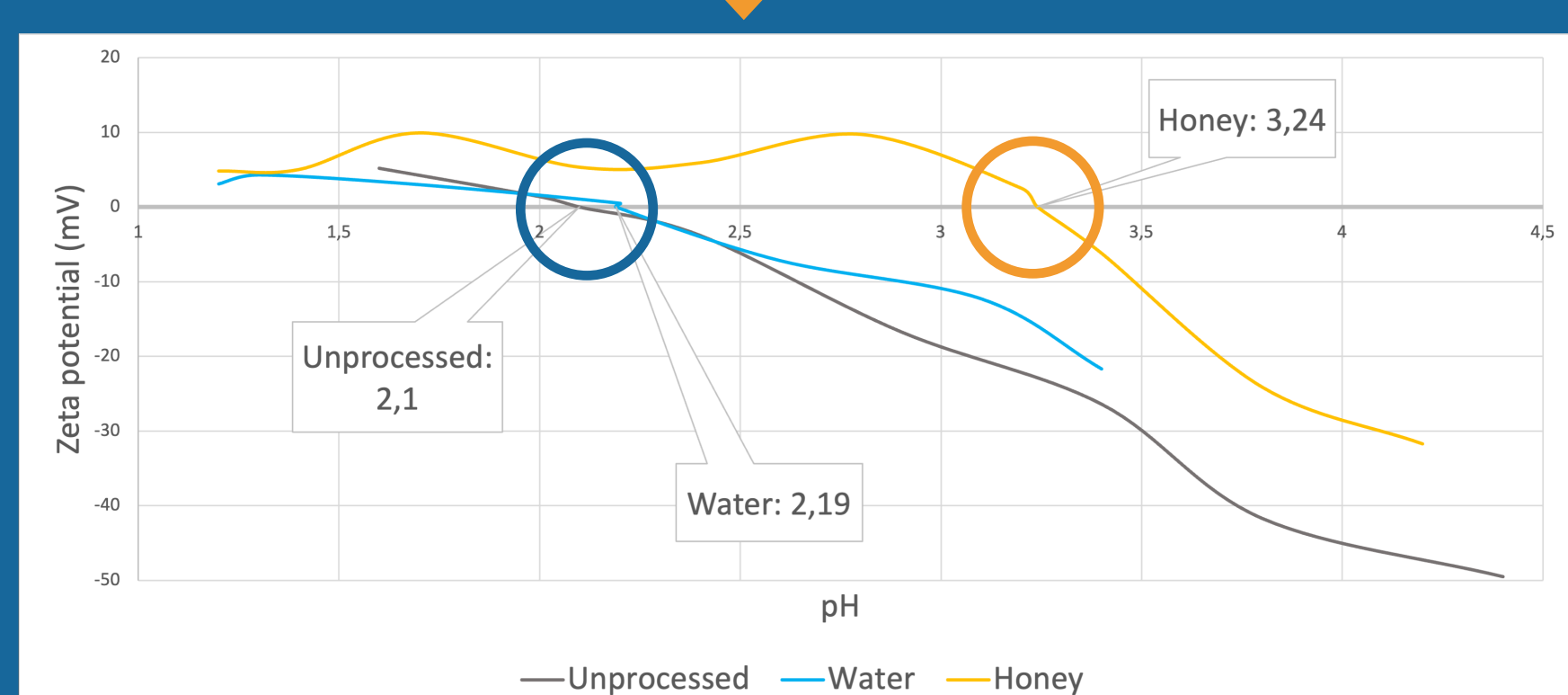
TEM micrograph of the final pigment after washing. Sample treated with Uranyl Acetate

## 5. EFFECTS

- The coating **reduces agglomeration** during washing
- This **facilitates the removal** of the **smallest non-colouring pigment particles**.
- The **isoelectric point (IEP)** of the pigment **changes**, revealing **alterations in the surface properties** of the smalt particles.



Inverted light micrographs at 40x magnification of the particles removed during washing. Smalt ground with **honey** (top), or with **water** (bottom).



## 6. CONCLUSION, CONTEXT & FUTURE RESEARCH

- Analysis examining which **component in the honey** is responsible for coating the smalt particles proved inconclusive so far. Further research is required.
- Eikelenberg's *ervarenis* reveals that artists not only manipulate binding media, as a growing body of research is showing, but also sought to **alter pigment properties** through various treatment and processing techniques. The experimental attitude of painters and writers towards smalt should be studied in the wider vein of paint property manipulation.
- The technical art historical implications of the honey coating are the topic of future research:
  - » It likely **influences the rheological behaviour** of the pigment particles in oil paint systems. Preliminary tests suggest a lower viscosity and better flow for paints with honey-coated smalt particles.
  - » As smalt degrades through the leaching of components from its glassy core, the **coating could play a role in the common discolouration mechanism**.



MORE INFO: