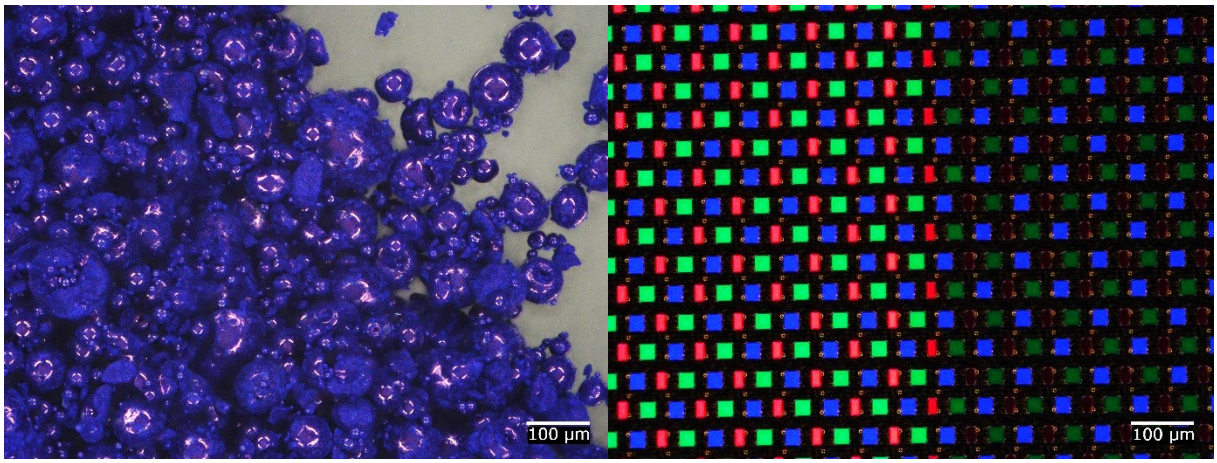
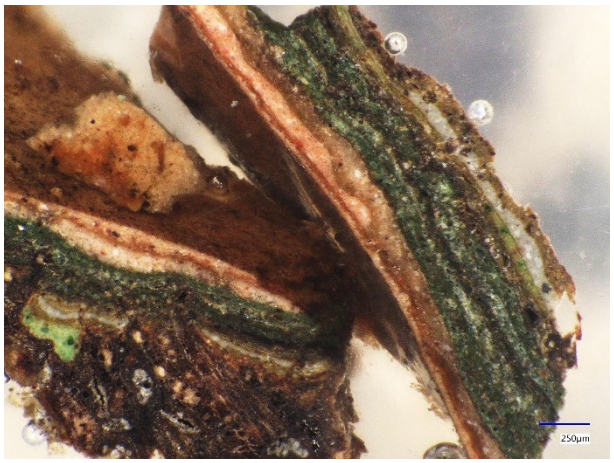
What is colour? TORCH brings science and cultural heritage into the classroom

How are colours created? What can pigments tell us about the history of a building? And what do historical dyes have to do with modern smartphone displays?

As part of the TORCH project, our partner at Christian-Albrechts-Universität zu Kiel has developed classroom experiments that **connect chemistry and physics with history and cultural heritage**. Under the title**"What is colour, really? From pigment to pixel"**, students embark on a journey from historical pigments and homemade dyes to cyanotypes and modern OLED displays.



The pigment Prussian blue (left) and the OLED display of a smartphone (right) viewed under a high-resolution light microscope. The 100 µm scale corresponds approximately to the thickness of a human hair.



Students also learn what the layers of paint on historic buildings can reveal about their past. An example from Ribe shows how a cross-section can reveal the different historical layers of paint on a timber-framed beam.

Cross-section through the paint layers on a timber-framed beam from Ribe, Denmark. The building dates from the 15th century and was originally painted red. Over the years, its colour changed from beige to green, black and white before returning to red, which today appears brown due to weathering.

The experiments have already been tested with **Year 8 students**. For a deeper understanding of the theoretical content, they are recommended for students from Year 10 onwards. The experiments are designed so that teachers can carry them out independently, and many of the required chemicals are already available in school laboratories.

We are now looking for more schools and teachers interested in trying out the experiments with their classes. Full instructions for carrying out the experiments are available, and Hendrik Groß from Christian-Albrechts-Universität zu Kiel is happy to provide support and answer any questions.

Interested? Please feel free to contact us or get in touch directly with Hendrik Groß at **hegr@tf.uni-kiel.de**.