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Wood Under the Microscope: A Week at Kew Gardens

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Figure 1. Egyptian figure of a boatman, carved from *Ficus sycamorus* (sycamore fig).

For those who work with microscopy, the study of wood reveals an intricate and often overlooked world of cellular complexity. In February, I had the privilege of attending the Wood Identification course at the Royal Botanic Gardens, Kew, an intensive, week-long programme dedicated to the microscopic analysis of wood anatomy. Led by Dr Peter Gasson and supported by a team of experienced specialists, the course provided a rare opportunity to develop advanced microscopy skills while working with one of the most extensive wood collections in the world.

The Jodrell Laboratory, where much of the course was based, has been a hub for botanical research at Kew since 1877. Originally founded to study plant physiology, it has since expanded into wood anatomy, forensic botany, and chemical wood identification, making it an ideal setting for this highly specialised course.

A Week Immersed in Microscopy

For RMS members, the true value of this course would lie in the hands-on experience with light

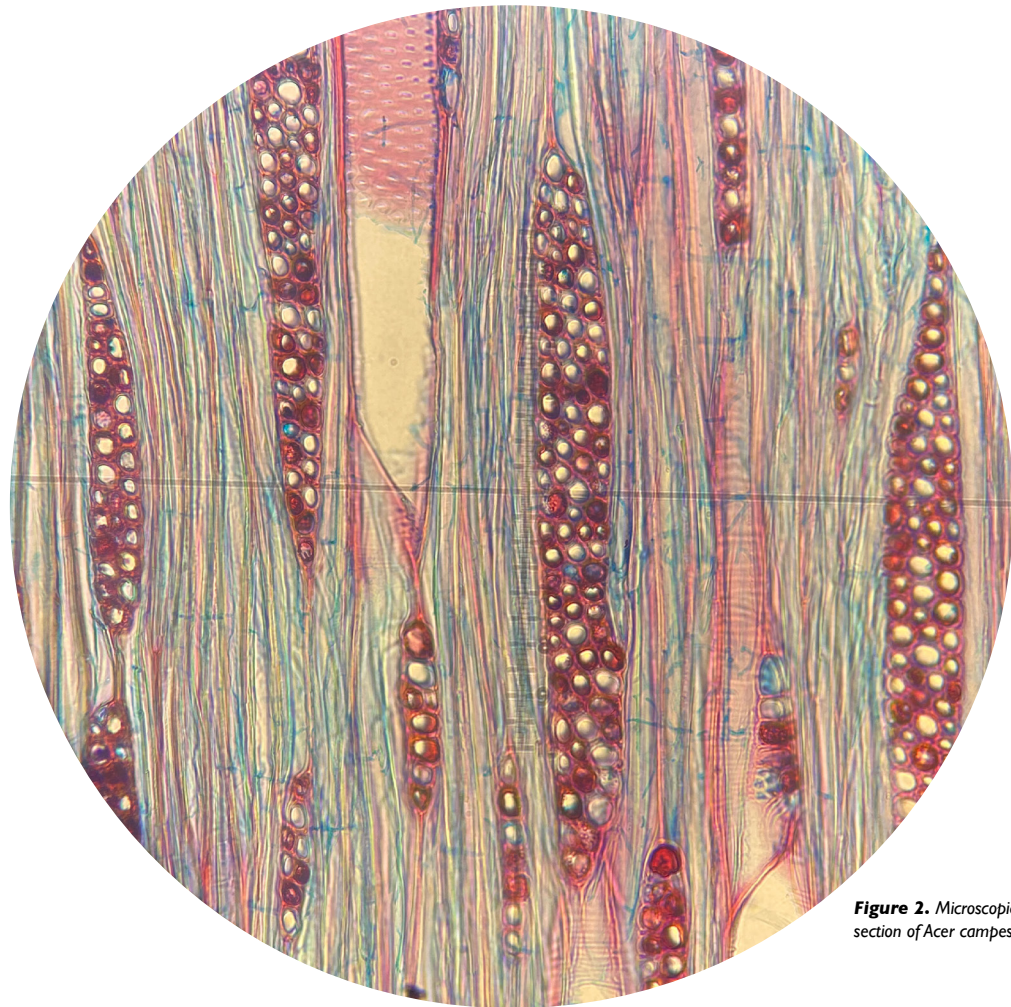


Figure 2. Microscopic tangential section of *Acer campestre*.

microscopy and the opportunity to analyse anatomical structures of wood at a microscopic level. Much of the week was spent refining the skills needed to distinguish hardwoods from softwoods, identify key diagnostic features such as vessel arrangements, ray structures, and axial parenchyma patterns, and understand the cellular variations that define different species.

We worked extensively with Kew's vast microscope slide collection, which includes reference samples from around the world, allowing for detailed comparisons between species. The Banks Building wood collection, another invaluable resource, provided understanding of real-world specimens, including an ancient Egyptian figure of a boatman, carved from *Ficus sycomorus* (sycamore fig), demonstrating the role of wood anatomy in heritage conservation, archaeology, and material science.

Cutting-Edge Chemical Analysis: DART Mass Spectrometry

A key addition to this year's course was an introduction to Direct Analysis in Real Time (DART) mass spectrometry, a non-destructive chemical identification method that is transforming forensic wood analysis. While microscopy remains the gold standard for wood identification, the DART approach offers a complementary tool for verifying species by analysing their chemical fingerprint – where one might struggle the other might complement. This was a perfect example of cross disciplinary potentials: seeing how Kew employs both traditional and modern techniques reinforced the value of integrating microscopy, chemical analysis, and digital databases — an approach highly relevant to scientists and researchers in a range of sectors.

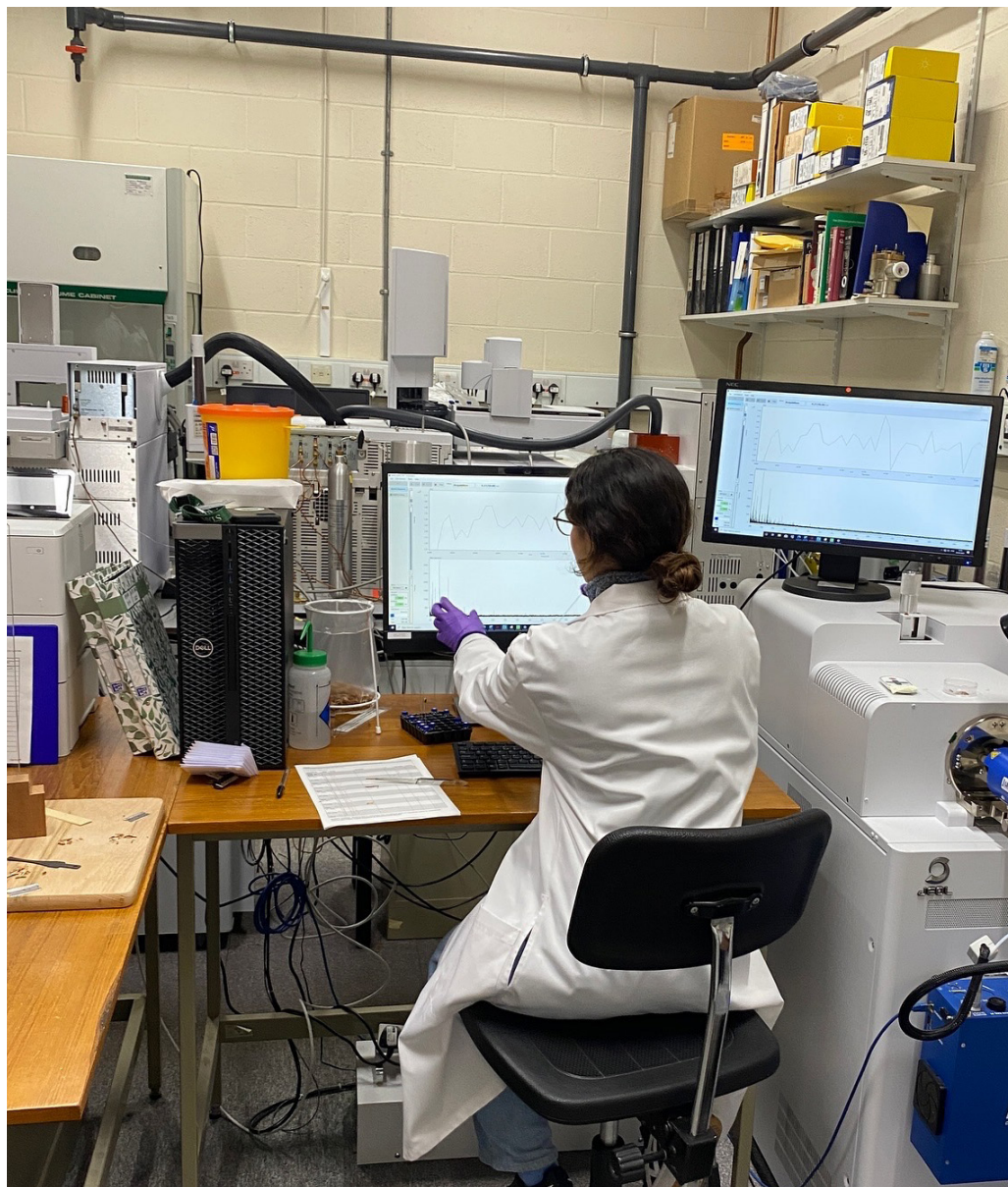


Figure 3. Direct Analysis in RealTime (DART) mass spectrometry in use at Kew's Jodrell Laboratory.

Applications for RMS Members

For those in the microscopy community, wood anatomy presents a rich and technically demanding area of study. The skills developed on this course could be directly applicable to many fields, from Forensic Science & Border Control, to Heritage Conservation & Archaeology, Environmental Science & Forestry, or even Material Science & Engineering. As a CPD week of study this was a very insightful and engaging course indeed.

An Excellent Learning Experience in a World-Renowned Environment

Studying wood in the historic setting of Kew Gardens, surrounded by a globally significant collection of specimens, state of the art microscopy facilities, and fantastic botanic gardens, made this course a truly unique experience. The combination of expert tuition, extensive practical work, and exposure to cutting-edge analytical techniques



Figure 4. Historic reference wood specimens from Kew's collections, including labelled samples used for comparative study and species identification.

makes this an invaluable training opportunity for any RMS member interested in the intersection of microscopy, material science, and conservation.

For those looking to expand their microscopy expertise in wood anatomy, I would highly recommend the Wood Identification course at Kew — an experience that brings botanical research, forensic analysis, and heritage science together

under one microscope.

Useful links:

<https://www.kew.org/science/training-and-education/continuing-professional-development/wood-identification>

<https://www.kew.org/science/training-and-education/continuing-professional-development>



Figure 5. Preserved botanical and material reference samples within the Kew collections, reflecting the breadth of resources supporting microscopy and identification.