



# Laboratory Services **Forensic Engineering**



# Forensic Engineering

## Overview

Downtime because of component failure can be disruptive and costly. Metallurgy is a branch of science and engineering, concerning the study of metals and materials. In this context it is a method of understanding the mechanism of component failure. Our metallurgists are experienced forensic engineers and understand the important requirements of initial securing and documenting of samples and the benefits of laboratory analysis as part of a detailed examination to determine the cause of failure.

We provide our specialist consultancy services to a wide range of builders, manufacturers and asset owners. This may be in a technical capacity where no failure has yet occurred, but a dispute arises over construction quality or where further knowledge is needed with regard to handling metals and manufacturing processes. Given the complexity of modern-day investigation, we often work as part of a multi-disciplined team.

We have a wide range of experience in different cases, including:

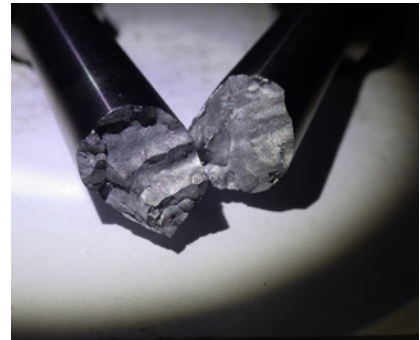
- Recommendations on metallic design and materials selection for engineering applications
- Large scale fabrication projects
- Quality and manufacture disputes
- Technical consultancy in relation to weld repair and inspection techniques
- Corrosion analysis and advice on corrosion management
- Cargo surveys and claims involving ferrous and non-ferrous cargoes, including re-bar, steel coils, aluminium sheet/ingots, and various finished products, as well as galvanised steel.
- Quality of raw materials and finished products, and the effect of using contaminated/defective products in sound production processes.

Our inhouse laboratory capabilities include:

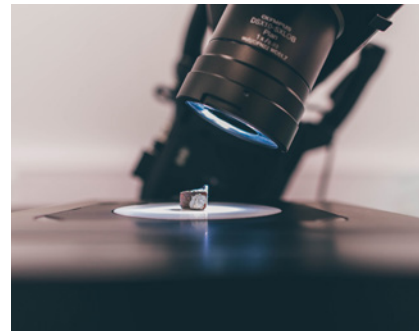
- High quality sectioning and sample preparation equipment
- Advanced digital microscopy
- Scanning Electron Microscopy (SEM)
- In Situ Material Analysis (Portable chemical analysis and hardness testing)
- Material Identification (LIBS, PMI-OES)
- Mechanical testing instruments
- Non-Destructive Testing (NDT)

Whatever your technical or scientific requirements Brookes Bell has a highly skilled and experienced team of experts ready to help you.

For more information please visit our website ([www.brookesbell.com](http://www.brookesbell.com)) or contact us on **+44 (0)151 236 0083**.



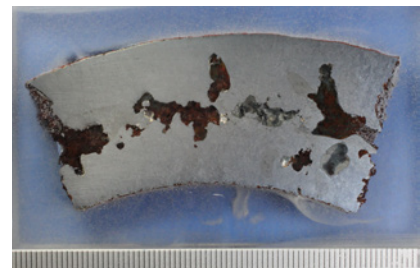
Each fracture tells a story of how it failed



High magnification examination can help to identify causative features



Example of progressive fatigue type failure



Example of porosity d-ring sample