

## **Analysis of the performance of metal matrix composite materials using synchrotron X-rays**

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Metal matrix composites are a class of material that offer significant weight savings over conventional alloys, by combining a metal matrix with a stiff ceramic reinforcement. Composites reinforced with ceramic particles have found applications in high-performance automotive and sporting applications, and are candidate materials for future aerospace components. Fibre-reinforced materials, whilst more costly to fabricate, are likely to find application in future aeroengine designs.

Synchrotron X-rays are useful in understanding the properties of metal matrix composites: firstly, diffraction can be used to measure the strains in both the metal and ceramic phases separately and simultaneously during loading; and secondly tomography can be applied to follow the internal failure mechanisms.

This talk will give a brief review of the application of synchrotron X-rays to the study of metal matrix composites, with some example results.