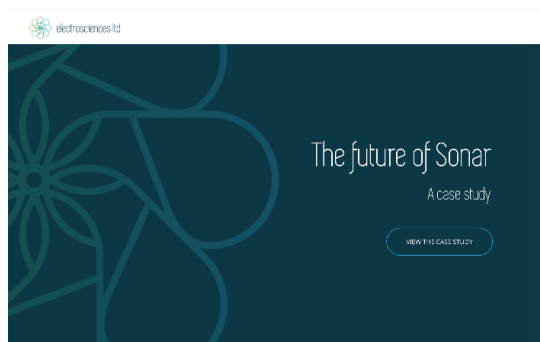


## Case Studies

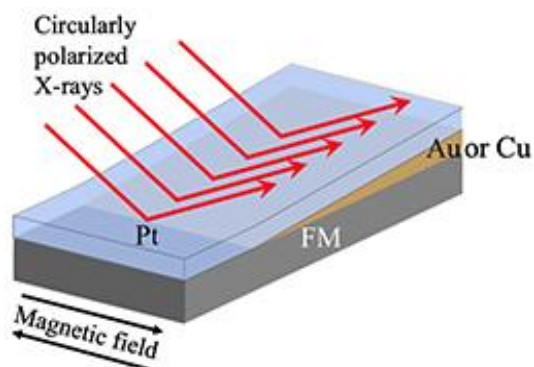
### The Future of Sonar: [A case study from Electrosiences](#)

Electrosiences Ltd have developed and commercialised a new multipurpose and multifunctional [stress-strain rig](#). This tool was co-developed with our collaboration partners the University of Liverpool and the XMaS beamline at the ESRF (European Synchrotron Radiation Facility), with early research support from the European Commission and the Office of Naval Research Global. The new rig allows users to characterise the electromechanical response of novel systems to stress, electric field, load, and temperature whilst simultaneously being scanned by an X-ray beam.



### APS Science Highlight: [Understanding the Flow of Spin Currents across Interfaces](#)

User science performed on beamline 4-ID-D at the Advanced Photon Source, Argonne National Laboratory as part of the mitigation of the XMaS dark period was selected as an [APS science highlight](#). Resonant magnetic scattering and dichroism using circular polarised light was used to explore the induced interface magnetic moment and its orientation. Conclusive evidence for a direct correlation with the magnetic damping in an adjoining ferromagnet was presented. Both the extent and size of the induced moment was determined in the experiment which was originally published in [Appl. Phys. Lett. 119, 152401 \(2021\)](#).



### 25 years of world-class science on XMaS: [Seeing is believing at the X-ray Materials Scattering facility](#)

The completion of the XMaS renewal coincided with the 25<sup>th</sup> anniversary of the XMaS facility which was highlighted by UKRI on its website as part of the “how-we-are-doing/research-outcomes-and-impact” section.

From tooth fillings to the Mary Rose, the UK’s X-ray Materials Scattering (XMaS) user facility allows scientists to explore the secrets of materials. 2022 marks the 25th anniversary of the operation of the UK’s XMaS user facility at the European Synchrotron Research Facility (ESRF) in Grenoble. It has been directed for all that time from Warwick and Liverpool University Physics Departments.

