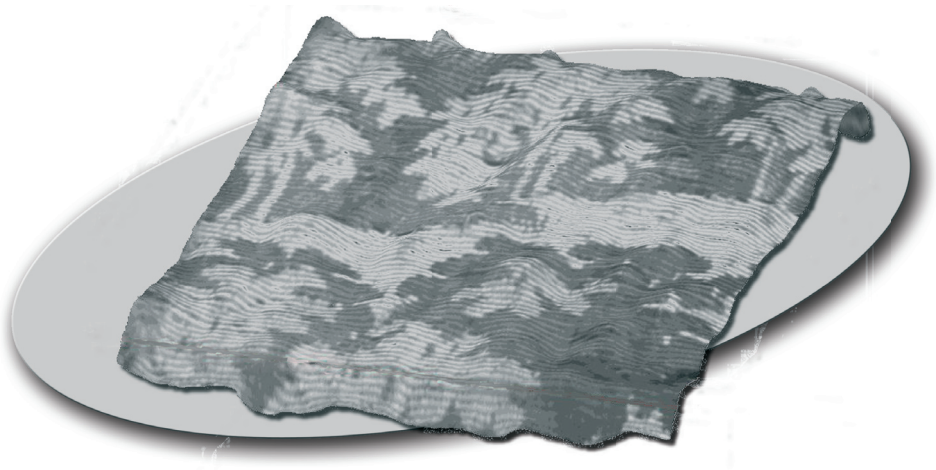
LaVision

We count on Photons

StrainMaster

Digital Image Correlation without speckle

LaVision **StrainMaster** systems are utilized in a wide range of applications, and their ease of use is enhanced by the nature of the robust correlation algorithms. Unlike many standard Digital Image Correlation (DIC) systems, **StrainMaster** is insensitive to the speckle pattern distribution and in many cases the natural surface of the material is quite sufficient to allow the acquisition of highly precise displacement and strain data.

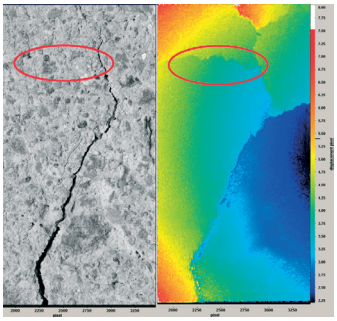


Advantages

- able to measure displacements of materials which must not be painted
- easy to achieve high quality results where the speckle is not „perfect“
- quantitative measurements by utilizing the natural material grain structures
- DIC on objects which cannot be painted due to access
- measure very high temperature specimens where paint will not adhere to the surface

The highly accurate **StrainMaster** system is able to measure down to 0.01 pixel precision allowing the identification of defects in materials before they are visible by eye.

Detection of discontinuities



Identification of cracks propagating through concrete - the highlighted region on the data contour plot clearly identifying cracks which are not visible in the structure. (courtesy of Dr Jerry Lord, National Physical Laboratory, UK)

LaVision‘s approach to Image Correlation means that all of the pertinent information is visible and the user chooses the level of post-processing. Whilst intelligent smoothing may be appropriate for standard materials undergoing tests in the elastic regime, this may not be appropriate in other cases where local discontinuities may be present but their onset cannot be predicted. The LaVision approach allows the user to inspect the raw displacement results prior to deciding upon the type of filtering necessary.

Main image: Reconstructed tapestry surface from stereoscopic DIC system. Image courtesy of Prof Janice Barton, University of Southampton

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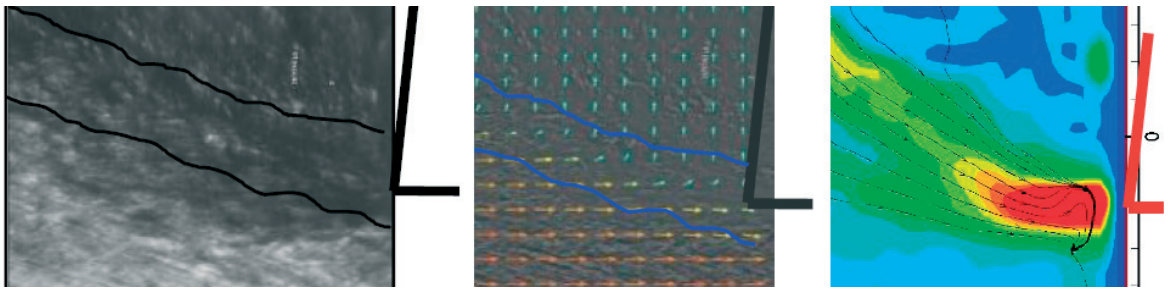
Turn key and custom solutions

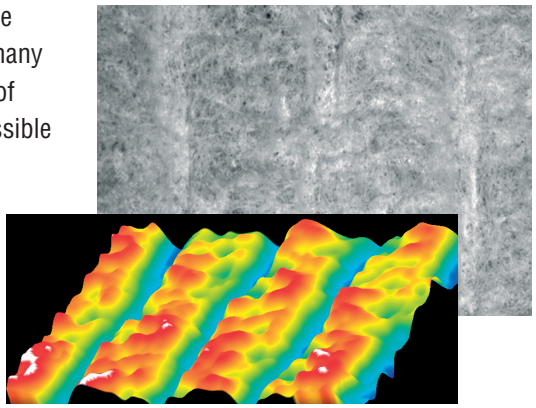
LaVision's range of systems includes turn-key products for standard applications, but we are also highly experienced in providing custom solutions for the most challenging measurements. *In this example highly sensitive LaVision cameras coupled with a stereo microscope for the quantitative measurement of metal cutting. Images were acquired at up to 20 MHz frame rate to quantify the shear zone. Below the raw image showing the natural surface pattern, displacement vectors, and β–slip lines are shown. (courtesy of Dr Madhavan, Witchita State University, U.S.)*



System Features

- complete control, analysis, and data management within one package
- fast processing on GPUs
- live gauge extensometer mode with scaled analogue output for strain control

The system gives the ability to quantify surface structures using the natural pattern alone in many atypical materials. In fact, if there is any kind of pattern or surface structure, it is normally possible to acquire quantitative data.



StrainMaster *was utilized to identify local displacements of toilet tissue under load. The top image shows the surface pattern and the surface structure resolved with a stereoscopic system is displayed below.*

With vast experience in the area of scientific imaging systems and Digital Imaging Correlation (DIC), LaVision provide the ultimate in quality and performance for your materials measurements needs. Please contact us today to discuss your materials analysis requirements.

Aug-10

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