MECHANICAL AND AEROSPACE ENGINEERING
COLLOQUIUM SERIES

“Diffraction Analysis of Residual and Applied Stress”

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Friday, September 25, 2009
1:30PM
205 Thurston Hall
Refreshments: 2:30pm, 206 Thurston Hall

ABSTRACT

Stress determination through diffraction strain measurements has been in use for about 80 years with remarkable results in the field of residual stresses. Applied load testing was usually done with known stresses, either for elastic constant determination or for the investigation of intergranular stresses. Increased availability of new facilities - particularly neutron sources - and improvements in X-ray equipment have now lead to a notable increase in tests where the otherwise unknown acting stresses are determined in-situ and non-destructively. Examples of work being done at NIST include the determination of yield surfaces in sheet metal forming under various biaxial load regimes, stresses in plastic bending of sheet materials and biaxial testing of cruciform specimens extracted from gas pipes.