From: David Muir <David.Muir@lightsource.ca>
Subject: Grating Measurements: here's what I have
Date: 17 August, 2011 4:38:32 PM CST
To: Mark Boots <mark.boots@usask.ca>

2 Attachments, 71 KB

From: Brian Yates <Brian.Yates@lightsource.ca>
Subject: **RE: REIXS XES MEG Grating**
Date: 29 August, 2007 4:08:08 PM CST
To: David Muir <David.Muir@lightsource.ca>
Cc: Dylan Maxwell <Dylan.Maxwell@lightsource.ca>

Hi David:

Dylan & I measured the CFI-4 grating #3 - 1200 l/mm 10 m radius Pt Coating
today ..

The grating & coating look fine visually ...

Here are the results:
LTP results:
R = 10.018 m
Standard deviation on R = 0.00146 m

Micromap Results:
Grating Surface Roughness = 7.849 Angstroms RMS (reasonably low, so good)

Our PSD analysis (Power Spectral Density) yields a peak at 1187.819 lines/mm (-1.015% from 1200 lines/mm)

Hope this helps ...

Brian/Dylan

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-----Original Message-----
From: David Muir
Sent: Tuesday, August 28, 2007 10:04 AM
To: Brian Yates
Subject: REIXS XES MEG Grating

Hi Brian,

Have you had a chance to look at that 3rd grating for our spectrometer? I'd like to get your analysis of it before I release payment for it, if possible.

Thanks,
David

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David Muir, M.Sc.
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From: Dylan Maxwell <Dylan.Maxwell@lightsource.ca>
Subject: **Grating Measurement Results**
Date: 1 August, 2007 11:58:41 AM CST
To: David Muir <David.Muir@lightsource.ca>
Cc: Brian Yates <Brian.Yates@lightsource.ca>

David,

Here are the metrology results for the two grating:

LEG #1 600 lines/mm R5m

Slope Error: 1.735 μrad RMS
Radius: 5.0256 m ± .0005 m

Line Width: 593.02 lines/mm ± 2.77 lines/mm (±0.47%)
Line Width error from 600 lines/mm = -1.16%
See attachment.

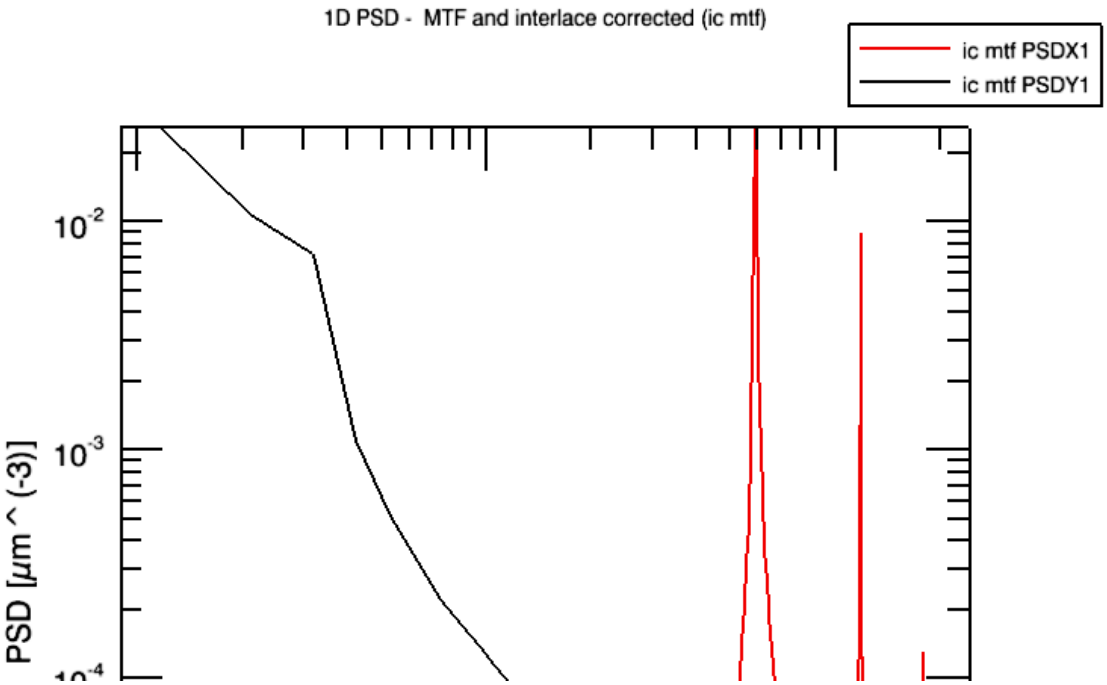
IMPURITY #2 900 lines/mm R6m

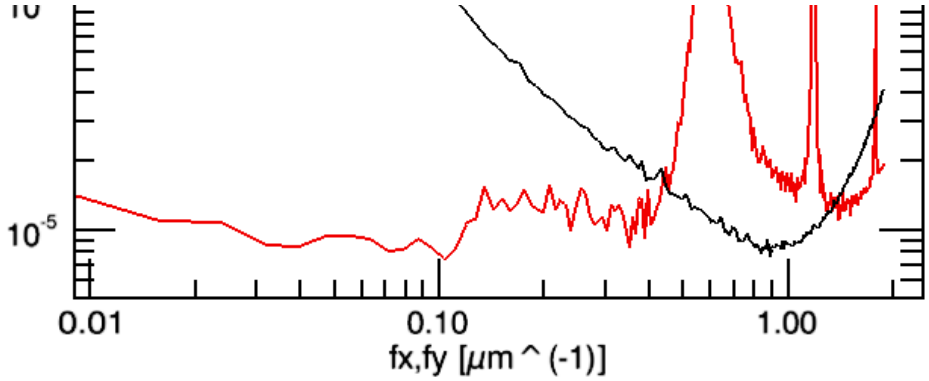
Slope Error: 1.535 μrad RMS
Radius: 6.6998 m ± .0013 m
***** ----->
David: Is this radius supposed to be 6.00 m? If so, it clearly doesn't meet spec and you should discuss this with Bernie Bach?
***** <-----

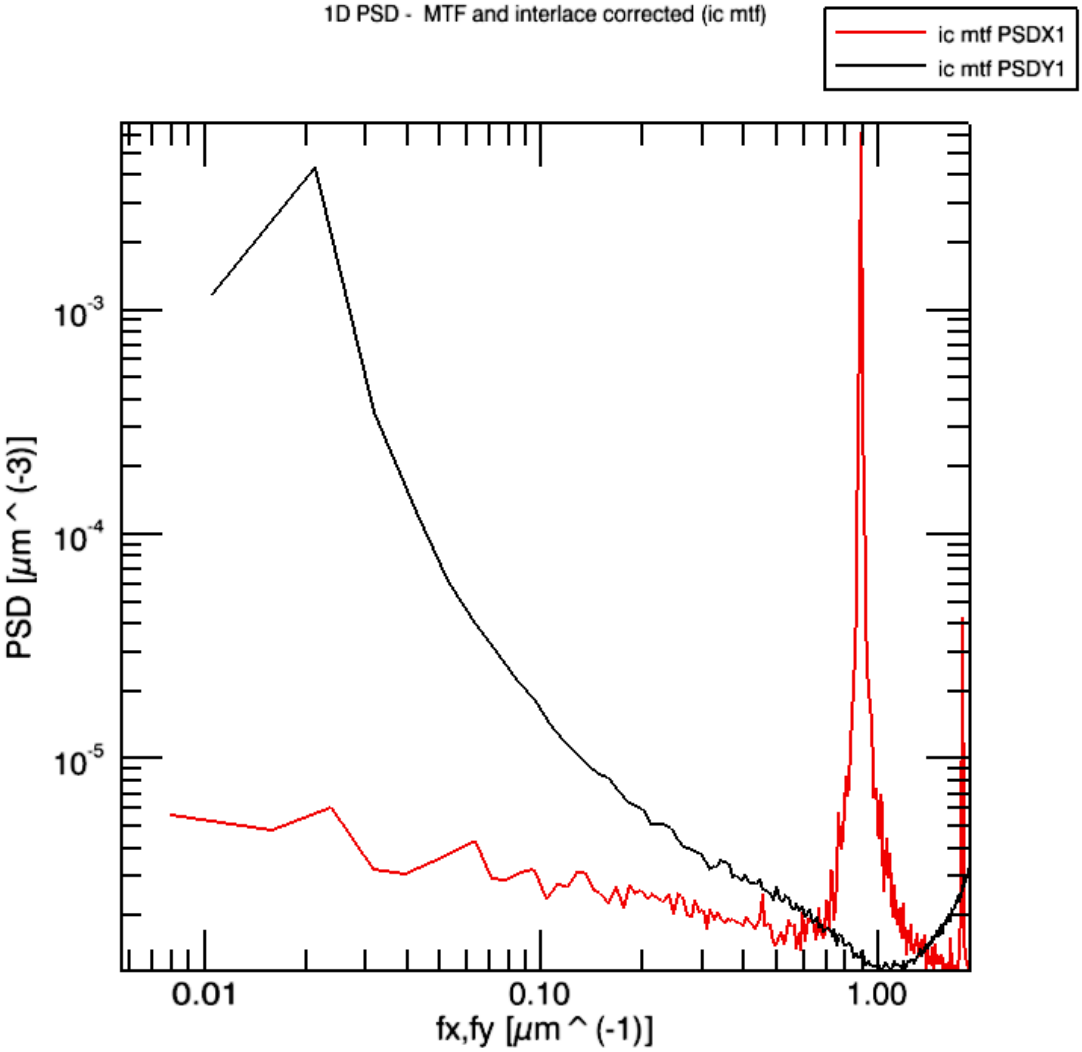
Line Width: 892.86 lines/mm ± 3.986 lines/mm (±0.45%)
Line Width error from 900 lines/mm = -0.793%
See attachment.

You should swing by our office soon, so that we can return the two gratings to you and discuss some of these results.

Cheers,
Brian/Dylan




10^{-5}
0.01
0.10
1.00
fx,fy [μm ^ (-1)]


1D PSD - MTF and interlace corrected (ic mtf)
ic mtf PSDX1
ic mtf PSDY1
PSD [μm ^ (-3)]
10^{-3}
10^{-4}
10^{-5}
0.01
0.10
1.00
fx,fy [μm ^ (-1)]

From: Alan Duffy <Alan.Duffy@lightsource.ca>
Subject: **REIXS Ni grating measurements**
Date: 2 November, 2007 5:43:56 PM CST
To: Feizhou He <Feizhou.He@lightsource.ca>, David Muir <David.Muir@lightsource.ca>
Cc: Brian Yates <Brian.Yates@lightsource.ca>

Here is the summary of the measurements that Brian and I took today on the REIXS Ni grating.

Surface roughness at 50X objective: 4.492 Angstrom rms

PSD measurement to determine line spacing: 1780 l/mm (-1.1% error from 1800 l/mm specification)

Slope error: 1.225 microradian rms slope error

Radius of curvature: r = 10.016 m (-0.13 % error from r = 10.029 m indicated on package).

Alan

p.s. Have a nice weekend.

From: Alan Duffy <Alan.Duffy@lightsource.ca>
Subject: **REIXS Pt-coated grating**
Date: 13 November, 2007 7:27:22 PM CST
To: Feizhou He <Feizhou.He@lightsource.ca>, David Muir <David.Muir@lightsource.ca>
Cc: Brian Yates <Brian.Yates@lightsource.ca>

Hi All,

The Pt coated gratings have been measured and here are the results:

HEG grating:

Surface roughness: 4.066 Angstroms rms (50X objective)
Line spacing: 1985 l/mm (50X objective, -0.75% from 2000 l/mm specification)
Radius of curvature: 1001.4 cm, (standard deviation = 0.002, n=7, -0.15% error from 1002.9 specification)
rms slope error = 0.976245 micro radians

HRHEG grating:

Surface roughness: 4.261 Angstroms rms (50X objective)
Line spacing: >= 2551 l/mm (limit of instrumentation, 50X objective) (2600 l/mm specification)
Radius of curvature: 1144.9 cm, (standard deviation = 0.002, n=7, -0.10% error from 1146.1 cm specification)
rms slope error = 0.964235 micro radians

The gratings are in the OML, I can drop them off at your office tomorrow.

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