## Reflectivity measurement - before, after CO2 washing INT primary mirror

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|---|---|---|
| *Equipment:* | uscan reflectometer | |
| *Mirror:* | INT Primary mirror | |
| *Person:* | Neil O'Mahony, Tibor Agocs | |
| *Date:* | 04/10/2007 | |
| *Lambda (micron):* | 0.67 | |
| *Incident angle (degree):* | 25 | |
| *BW (Bandwidth) limits:* | 1 | 0.1 |

***INT mirror - before CO2 cleaning***

| No# | BSDF - 0°,0° detector position | BSDF - 50°,180° detector position | reflectivity | rms (Ångstrom) | time | date |
|---|---|---|---|---|---|---|
| 3 | 1.07E-02 | 4.99E-03 | 0.854 | 75.3 | 08:47:10 | 10/04/2007 |
| 4 | 1.06E-02 | 5.03E-03 | 0.843 | 75.4 | 08:47:14 | 10/04/2007 |
| 5 | 1.05E-02 | 5.07E-03 | 0.853 | 74.6 | 08:47:19 | 10/04/2007 |
| 6 | 1.10E-02 | 4.69E-03 | 0.856 | 76.7 | 08:47:27 | 10/04/2007 |
| 7 | 1.10E-02 | 4.67E-03 | 0.855 | 76.9 | 08:47:32 | 10/04/2007 |
| 8 | 1.10E-02 | 4.68E-03 | 0.855 | 77 | 08:47:36 | 10/04/2007 |
| 9 | 1.26E-02 | 6.87E-03 | 0.845 | 81.5 | 08:47:45 | 10/04/2007 |
| 10 | 1.26E-02 | 6.95E-03 | 0.841 | 81.7 | 08:47:50 | 10/04/2007 |
| 11 | 1.25E-02 | 6.99E-03 | 0.846 | 81.3 | 08:47:55 | 10/04/2007 |
| 12 | 1.17E-02 | 5.94E-03 | 0.859 | 78.2 | 08:48:04 | 10/04/2007 |
| 13 | 1.18E-02 | 5.91E-03 | 0.855 | 78.7 | 08:48:08 | 10/04/2007 |
| 14 | 1.18E-02 | 5.91E-03 | 0.852 | 78.9 | 08:48:13 | 10/04/2007 |
| 15 | 1.40E-02 | 5.74E-03 | 0.832 | 88 | 08:48:21 | 10/04/2007 |
| 16 | 1.41E-02 | 5.74E-03 | 0.841 | 88 | 08:48:26 | 10/04/2007 |
| 17 | 1.41E-02 | 5.72E-03 | 0.841 | 87.9 | 08:48:31 | 10/04/2007 |
| 18 | 1.27E-02 | 4.83E-03 | 0.848 | 83.9 | 08:52:01 | 10/04/2007 |
| 19 | 1.28E-02 | 4.80E-03 | 0.843 | 84.3 | 08:52:06 | 10/04/2007 |
| 20 | 1.28E-02 | 4.80E-03 | 0.847 | 84.2 | 08:52:11 | 10/04/2007 |
| 21 | 1.61E-02 | 6.71E-03 | 0.828 | 94.5 | 08:52:19 | 10/04/2007 |
| 22 | 1.61E-02 | 6.65E-03 | 0.818 | 95.4 | 08:52:24 | 10/04/2007 |
| 23 | 1.65E-02 | 6.78E-03 | 0.809 | 97.2 | 08:52:28 | 10/04/2007 |
| 24 | 1.34E-02 | 5.42E-03 | 0.852 | 85.2 | 08:52:37 | 10/04/2007 |
| 25 | 1.33E-02 | 5.50E-03 | 0.847 | 85 | 08:52:41 | 10/04/2007 |
| **average** | **1.276E-02** | **5.669E-03** | **0.844** | **83.035** | | |
| **standard dev** | **1.766E-03** | **8.181E-04** | **0.012** | **6.537** | | |

***INT mirror - after CO2 cleaning***

| No# | BSDF - 0°,0° detector position | BSDF - 50°,180° detector position | reflectivity | rms (Ångstrom) | time | date |
|---|---|---|---|---|---|---|
| 26 | 7.88E-03 | 2.04E-03 | 0.865 | 69 | 09:12:36 | 10/04/2007 |
| 27 | 7.97E-03 | 2.07E-03 | 0.867 | 69.3 | 09:12:41 | 10/04/2007 |
| 28 | 8.03E-03 | 2.08E-03 | 0.858 | 70 | 09:12:45 | 10/04/2007 |
| 29 | 7.60E-03 | 2.80E-03 | 0.868 | 64.3 | 09:12:54 | 10/04/2007 |
| 30 | 7.64E-03 | 2.77E-03 | 0.871 | 64.4 | 09:12:59 | 10/04/2007 |
| 31 | 7.61E-03 | 2.82E-03 | 0.866 | 64.3 | 09:13:03 | 10/04/2007 |
| 32 | 8.01E-03 | 2.55E-03 | 0.866 | 67.2 | 09:13:11 | 10/04/2007 |
| 33 | 8.01E-03 | 2.56E-03 | 0.861 | 67.4 | 09:13:15 | 10/04/2007 |
| 34 | 8.05E-03 | 2.57E-03 | 0.863 | 67.5 | 09:13:20 | 10/04/2007 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 35 | 1.21E-02 | 4.41E-03 | 0.853 | 82 | 09:13:27 | 10/04/2007 |
| 36 | 1.22E-02 | 4.45E-03 | 0.855 | 82 | 09:13:31 | 10/04/2007 |
| 37 | 1.22E-02 | 4.48E-03 | 0.854 | 82.2 | 09:13:36 | 10/04/2007 |
| 38 | 9.92E-03 | 3.43E-03 | 0.842 | 75.1 | 09:13:47 | 10/04/2007 |
| 39 | 9.93E-03 | 3.41E-03 | 0.848 | 74.9 | 09:13:51 | 10/04/2007 |
| 40 | 9.91E-03 | 3.41E-03 | 0.85 | 74.7 | 09:13:56 | 10/04/2007 |
| 41 | 1.35E-02 | 3.64E-03 | 0.846 | 90.7 | 09:14:04 | 10/04/2007 |
| 42 | 1.37E-02 | 3.60E-03 | 0.836 | 92.3 | 09:14:09 | 10/04/2007 |
| 43 | 1.38E-02 | 3.61E-03 | 0.841 | 92.5 | 09:14:14 | 10/04/2007 |
| 44 | 8.59E-03 | 2.66E-03 | 0.846 | 70.7 | 09:14:21 | 10/04/2007 |
| 45 | 8.52E-03 | 2.67E-03 | 0.84 | 70.6 | 09:14:25 | 10/04/2007 |
| 46 | 8.52E-03 | 2.65E-03 | 0.841 | 70.6 | 09:14:30 | 10/04/2007 |
| 47 | 1.22E-02 | 3.87E-03 | 0.847 | 83.9 | 09:14:37 | 10/04/2007 |
| 48 | 1.25E-02 | 3.82E-03 | 0.832 | 86 | 09:14:41 | 10/04/2007 |
| 49 | 1.24E-02 | 3.82E-03 | 0.842 | 85.4 | 09:14:46 | 10/04/2007 |
| **average** | **1.003E-02** | **3.175E-03** | **0.852** | **75.708** | | |
| **standard dev** | **2.272E-03** | **7.517E-04** | **0.011** | **9.244** | | |

***scratches on the upper left part (from two measurements)***

| No# | BSDF - 0°,0° detector position | BSDF - 50°,180° detector position | reflectivity | rms (Ångstrom) | time | date |
|---|---|---|---|---|---|---|
| 1 | 5.59E-03 | 1.49E-03 | 0.868 | 57.7 | 13:03:18 | 10/04/2007 |
| 2 | 5.58E-03 | 1.49E-03 | 0.87 | 57.6 | 13:03:23 | 10/04/2007 |
| 3 | 5.58E-03 | 1.50E-03 | 0.87 | 57.5 | 13:03:28 | 10/04/2007 |
| 4 | 8.87E-03 | 2.30E-03 | 0.851 | 73.8 | 13:03:43 | 10/04/2007 |
| 5 | 8.89E-03 | 2.34E-03 | 0.845 | 73.9 | 13:03:48 | 10/04/2007 |
| 6 | 9.04E-03 | 2.41E-03 | 0.838 | 74.7 | 13:03:53 | 10/04/2007 |
| 7 | 9.76E-03 | 2.87E-03 | 0.857 | 75.5 | 13:04:00 | 10/04/2007 |
| 8 | 9.83E-03 | 2.89E-03 | 0.858 | 75.7 | 13:04:05 | 10/04/2007 |
| 9 | 9.89E-03 | 2.90E-03 | 0.856 | 76.1 | 13:04:09 | 10/04/2007 |
| 10 | 9.73E-03 | 2.73E-03 | 0.862 | 75.8 | 13:04:18 | 10/04/2007 |
| 11 | 9.70E-03 | 2.72E-03 | 0.861 | 75.6 | 13:04:22 | 10/04/2007 |
| 12 | 9.75E-03 | 2.74E-03 | 0.855 | 76.1 | 13:04:27 | 10/04/2007 |
| 13 | 9.18E-03 | 2.56E-03 | 0.887 | 72.6 | 13:04:37 | 10/04/2007 |
| 14 | 9.12E-03 | 2.56E-03 | 0.878 | 72.7 | 13:04:41 | 10/04/2007 |
| 15 | 9.12E-03 | 2.56E-03 | 0.869 | 73 | 13:04:45 | 10/04/2007 |
| 16 | 7.03E-03 | 1.99E-03 | 0.878 | 63.7 | 13:04:58 | 10/04/2007 |
| 17 | 7.12E-03 | 1.96E-03 | 0.875 | 64.5 | 13:05:02 | 10/04/2007 |
| 18 | 7.16E-03 | 1.96E-03 | 0.875 | 64.8 | 13:05:06 | 10/04/2007 |
| 19 | 1.00E-02 | 2.35E-03 | 0.861 | 79.8 | 13:05:20 | 10/04/2007 |
| 20 | 1.00E-02 | 2.35E-03 | 0.866 | 79.4 | 13:05:24 | 10/04/2007 |
| 21 | 1.00E-02 | 2.35E-03 | 0.866 | 79.6 | 13:05:28 | 10/04/2007 |
| 22 | 9.41E-03 | 2.99E-03 | 0.867 | 72.8 | 13:05:37 | 10/04/2007 |
| 23 | 9.42E-03 | 2.98E-03 | 0.866 | 73 | 13:05:42 | 10/04/2007 |
| 24 | 9.39E-03 | 2.97E-03 | 0.866 | 72.9 | 13:05:46 | 10/04/2007 |
| 25 | 7.38E-03 | 2.04E-03 | 0.866 | 66 | 13:06:04 | 10/04/2007 |
| 26 | 7.31E-03 | 2.00E-03 | 0.863 | 65.9 | 13:06:08 | 10/04/2007 |
| 27 | 7.30E-03 | 1.99E-03 | 0.868 | 65.7 | 13:06:12 | 10/04/2007 |
| 28 | 7.68E-03 | 1.51E-03 | 0.865 | 72.9 | 13:06:20 | 10/04/2007 |
| 29 | 7.67E-03 | 1.51E-03 | 0.854 | 73.3 | 13:06:25 | 10/04/2007 |
| 30 | 7.69E-03 | 1.52E-03 | 0.86 | 73 | 13:06:29 | 10/04/2007 |
| 31 | 6.56E-03 | 1.97E-03 | 0.869 | 61.3 | 13:06:46 | 10/04/2007 |
| 32 | 6.59E-03 | 1.96E-03 | 0.868 | 61.5 | 13:06:50 | 10/04/2007 |
| 33 | 6.59E-03 | 1.94E-03 | 0.864 | 61.7 | 13:06:54 | 10/04/2007 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 34 | 6.49E-03 | 1.81E-03 | 0.876 | 61.4 | 13:07:11 | 10/04/2007 |
| 35 | 6.46E-03 | 1.80E-03 | 0.874 | 61.4 | 13:07:15 | 10/04/2007 |
| 36 | 6.47E-03 | 1.79E-03 | 0.871 | 61.5 | 13:07:19 | 10/04/2007 |
| 50 | 9.20E-03 | 2.50E-03 | 0.853 | 74.4 | 09:15:11 | 10/04/2007 |
| 51 | 8.68E-03 | 2.40E-03 | 0.886 | 70.8 | 09:15:20 | 10/04/2007 |
| 52 | 6.86E-03 | 1.98E-03 | 0.85 | 63.7 | 09:15:27 | 10/04/2007 |
| 53 | 8.26E-03 | 2.64E-03 | 0.921 | 66.2 | 09:15:38 | 10/04/2007 |
| **average** | **8.160E-03** | **2.233E-03** | **0.866** | **69.488** | | |
| **standard dev** | **1.438E-03** | **4.745E-04** | **0.013** | **6.636** | | |

Notes:
RMS - Root Mean Square surface roughness in Angstrom,
BSDF - Bidirectional scatter distribution function, it is equal to the scattered power per unit solid angle