

Before CO2

Neil O'Mahony performed cleaning, took data, processed it and wrote this report
 Dome Humidity <25%, Temperature ~12 degC
 Published 19 April 2011

SMS Reflectometer measurements immediately before CO2 cleaning of the WHT Primary mirror surface (parked at zenith).

Lambda 0.67
 Incident Angle 25

	BDSF (Scattering)		REFLECTANCE	Surface Roughness RMS (Å)	comments	"TIME"	"DATE"
	Pos 1:	Pos 2:					
	Zenith 0° Azim. 0°	Zenith 50° Azim. 180°					
Ref mirror	3.47E-003	1.35E-003	0.905	42.3		"10:01:49"	"09-30-2010"
2	3.48E-003	1.35E-003	0.906	42.4		"10:01:54"	"09-30-2010"
3	3.37E-003	1.28E-003	0.902	41.8		"10:02:00"	"09-30-2010"
4	3.38E-003	1.29E-003	0.900	41.9		"10:02:05"	"09-30-2010"
5	2.24E-003	1.53E-003	0.916	32.8		"10:02:11"	"09-30-2010"
6	2.24E-003	1.53E-003	0.917	32.8		"10:02:15"	"09-30-2010"
7	5.06E-003	9.50E-004	0.897	58.9		"10:02:21"	"09-30-2010"
8	5.06E-003	9.51E-004	0.897	58.9		"10:02:26"	"09-30-2010"
9	2.52E-003	1.23E-003	0.911	35.3		"10:02:31"	"09-30-2010"
10	2.52E-003	1.23E-003	0.912	35.3		"10:02:36"	"09-30-2010"

0.906
0.003

Primary	9.99E-003	5.28E-003	0.825	73.6		"10:09:27"	"09-30-2010"
12	1.00E-002	5.27E-003	0.825	73.7		"10:09:33"	"09-30-2010"
13	7.74E-003	2.80E-003	0.842	66		"10:09:43"	"09-30-2010"
14	7.75E-003	2.81E-003	0.841	66.1		"10:09:48"	"09-30-2010"
15	8.59E-003	3.02E-003	0.839	69.8	skip	"10:09:58"	"09-30-2010"
16	8.87E-003	2.68E-003	0.832	72.8		"10:11:40"	"09-30-2010"
17	8.90E-003	2.69E-003	0.830	72.9		"10:11:46"	"09-30-2010"
18	1.36E-002	5.19E-003	0.809	88.9		"10:11:56"	"09-30-2010"
19	1.36E-002	5.19E-003	0.809	88.9		"10:12:00"	"09-30-2010"
20	8.87E-003	2.83E-003	0.812	73.1	skip	"10:12:10"	"09-30-2010"
21	9.81E-003	3.92E-003	0.822	74.5		"10:13:06"	"09-30-2010"
22	9.81E-003	3.92E-003	0.822	74.5		"10:13:11"	"09-30-2010"
23	9.50E-003	3.59E-003	0.829	73.3		"10:13:20"	"09-30-2010"
24	9.49E-003	3.57E-003	0.829	73.3		"10:13:25"	"09-30-2010"
25	1.22E-002	8.27E-003	0.800	82.1	skip	"10:13:36"	"09-30-2010"
26	1.23E-002	6.22E-003	0.818	82.4		"10:18:01"	"09-30-2010"
27	1.24E-002	6.25E-003	0.804	83.1		"10:18:05"	"09-30-2010"

1.03E-002 4.24E-003 0.824 76
7.39E-004 4.91E-004 0.004 2.72

Ref mirror	1.87E-003	7.77E-004	0.904	30.9		"10:22:38"	"09-30-2010"
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Before CO2

29	1.88E-003	7.90E-004	0.905	30.9		"10:22:43"	"09-30-2010"
30	2.54E-003	1.96E-003	0.914	35		"10:22:48"	"09-30-2010"
31	2.55E-003	1.97E-003	0.913	35.1		"10:22:53"	"09-30-2010"
32	3.96E-003	2.08E-003	0.884	44.8		"10:22:59"	"09-30-2010"
33	3.98E-003	2.09E-003	0.884	44.9		"10:23:04"	"09-30-2010"
34	8.06E-003	3.96E-003	0.888	64		"10:23:09"	"09-30-2010"
35	8.05E-003	3.97E-003	0.887	64		"10:23:14"	"09-30-2010"
36	6.01E-003	2.53E-003	0.916	55		"10:23:20"	"09-30-2010"
37	6.04E-003	2.54E-003	0.918	55		"10:23:24"	"09-30-2010"
38	6.79E-003	4.42E-003	0.922	57		"10:23:30"	"09-30-2010"
39	6.78E-003	4.43E-003	0.921	57		"10:23:34"	"09-30-2010"
40	3.45E-003	1.66E-003	0.891	41.8	solo	"10:23:40"	"09-30-2010"

0.905 low but similar to before M1 measurements

0.006

unknown	3.29E-002	1.46E-002	0.717	144.7		"12:06:58"	"09-30-2010"
42	3.29E-002	1.47E-002	0.721	144.4		"12:07:03"	"09-30-2010"
43	3.30E-002	1.47E-002	0.721	144.5		"12:07:08"	"09-30-2010"
44	3.19E-002	1.43E-002	0.720	142.2		"12:07:38"	"09-30-2010"
45	3.20E-002	1.43E-002	0.720	142.3		"12:07:43"	"09-30-2010"
46	3.62E-002	1.49E-002	0.703	154.3		"12:07:51"	"09-30-2010"
47	3.65E-002	1.49E-002	0.689	156.5		"12:07:56"	"09-30-2010"
48	3.40E-002	1.52E-002	0.724	146.4		"12:08:10"	"09-30-2010"
49	2.24E-002	5.54E-003	0.761	125.4		"12:26:47"	"09-30-2010"
50	2.25E-002	5.55E-003	0.751	126.6		"12:26:53"	"09-30-2010"
51	2.28E-002	5.54E-003	0.763	126.6		"12:27:00"	"09-30-2010"
52	2.05E-002	5.04E-003	0.775	119		"12:27:12"	"09-30-2010"

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**SMS Reflectometer measurements more than one hour after CO2 cleaning
 of the WHT Primary mirror surface (parked at zenith)**

Lambda 0.67
 Incident Angle 25

	BDSF (Scattering)		REFLECTANCE	Surface Roughness RMS (Å)	comments	"TIME"	"DATE"
	Pos 1:	Pos 2:					
	Zenith 0° Azim. 0°	Zenith 50° Azim. 180°					
Primary Mirror	6.69E-003	1.60E-003	0.848	65.4		"13:59:34"	"09-30-2010"
2	6.69E-003	1.60E-003	0.848	65.4		"13:59:38"	"09-30-2010"
3	7.38E-003	2.02E-003	0.848	66.8		"13:59:47"	"09-30-2010"
4	7.39E-003	2.02E-003	0.850	66.8		"13:59:52"	"09-30-2010"
5	7.38E-003	1.89E-003	0.852	67.5		"14:00:01"	"09-30-2010"
6	7.38E-003	1.88E-003	0.850	67.7		"14:00:06"	"09-30-2010"
7	7.13E-003	1.78E-003	0.851	66.7		"14:00:19"	"09-30-2010"
8	7.13E-003	1.78E-003	0.850	66.8		"14:00:24"	"09-30-2010"
9	9.42E-003	2.60E-003	0.819	76.6		"14:01:15"	"09-30-2010"
10	9.43E-003	2.60E-003	0.818	76.8		"14:01:20"	"09-30-2010"
11	7.45E-003	1.90E-003	0.836	68.5		"14:01:27"	"09-30-2010"
12	7.46E-003	1.90E-003	0.835	68.7		"14:01:32"	"09-30-2010"
13	7.84E-003	2.10E-003	0.802	71.1		"14:01:40"	"09-30-2010"
14	7.84E-003	2.10E-003	0.803	71.1		"14:01:45"	"09-30-2010"
15	1.97E-008	2.25E-008	0.001	3	skip	"14:01:52"	"09-30-2010"
16	1.97E-008	2.25E-008	0.001	3	skip	"14:02:21"	"09-30-2010"
17	6.38E-003	1.56E-003	0.814	64.8		"14:02:28"	"09-30-2010"
18	6.37E-003	1.56E-003	0.812	64.8		"14:02:33"	"09-30-2010"
19	5.89E-003	1.24E-003	0.815	64.5		"14:02:40"	"09-30-2010"
20	5.89E-003	1.24E-003	0.815	64.6		"14:02:45"	"09-30-2010"
21	6.37E-003	1.73E-003	0.821	63.2		"14:02:53"	"09-30-2010"
22	6.39E-003	1.72E-003	0.819	63.4		"14:02:57"	"09-30-2010"
23	6.14E-003	1.48E-003	0.830	63.2		"14:03:05"	"09-30-2010"
24	6.14E-003	1.46E-003	0.830	63.4		"14:03:10"	"09-30-2010"
25	1.10E-002	1.76E-004	0.001	>1177	skip	"14:03:44"	"09-30-2010"
26	6.69E-003	1.69E-003	0.848	64.6		"14:03:54"	"09-30-2010"
27	6.67E-003	1.69E-003	0.848	64.4		"14:03:59"	"09-30-2010"
28	5.59E-003	1.37E-003	0.835	59.9		"14:04:10"	"09-30-2010"
29	5.59E-003	1.37E-003	0.832	60		"14:04:15"	"09-30-2010"
30	6.67E-003	1.79E-003	0.828	64.5		"14:04:23"	"09-30-2010"
31	6.67E-003	1.79E-003	0.828	64.5		"14:04:28"	"09-30-2010"
32	8.29E-003	1.97E-003	0.798	75.1		"14:04:42"	"09-30-2010"
33	8.29E-003	1.97E-003	0.798	75.1		"14:04:47"	"09-30-2010"
34	8.39E-003	1.78E-003	0.800	77.5		"14:04:56"	"09-30-2010"
35	8.36E-003	1.78E-003	0.801	77.3		"14:05:01"	"09-30-2010"
36	6.35E-003	1.58E-003	0.810	64.6		"14:05:09"	"09-30-2010"

After CO2

37	6.34E-003	1.58E-003	0.810	64.5		"14:05:14"	"09-30-2010"
38	5.13E-003	1.19E-003	0.820	58.6	solo	"14:05:22"	"09-30-2010"
average	7.06E-003	1.77E-003	0.827	67.35			
std error	2.06E-004	6.46E-005	0.004	1.02			
Improvement	1.5	2.4	none	11%	compared with before cleaning		

Sanity check with

Ref Mirror	2.36E-003	1.16E-003	0.911	34.1		"14:09:53"	"09-30-2010"
40	2.36E-003	1.16E-003	0.911	34.1		"14:09:58"	"09-30-2010"
41	1.99E-003	1.21E-003	0.902	31.3		"14:10:06"	"09-30-2010"
42	1.99E-003	1.21E-003	0.903	31.3		"14:10:11"	"09-30-2010"
43	1.86E-003	1.79E-003	0.918	29.9		"14:10:18"	"09-30-2010"
average			0.909		Low but similar to before cleaning		