

Table S1: RSD of spectral data in experiment I.

θ	RSD/%		
	Fe I 305.9067nm	Cr I 322.2318nm	Ti I 383.3911nm
-20	4.964	6.162	3.438
-19	4.512	5.124	2.808
-18	3.908	5.878	4.037
-17	3.124	4.512	2.561
-16	3.759	4.350	2.909
-15	3.125	4.511	2.565
-14	2.890	4.408	2.428
-13	3.750	4.652	2.656
-12	2.904	3.251	2.226
-11	3.452	4.856	2.558
-10	3.746	5.201	2.728
-9	2.945	5.235	2.455
-8	3.045	3.815	2.770
-7	3.124	3.998	2.845
-6	3.458	4.192	2.737
-5	3.521	4.215	2.412
-4	3.155	4.409	3.181
-3	4.012	4.512	2.512
-2	3.458	4.854	2.458
-1	3.852	4.510	2.321
0	3.155	4.597	2.485
1	2.932	5.211	2.103
2	2.912	5.365	2.137
3	3.152	5.332	2.457
4	3.154	4.332	2.545
5	3.784	4.199	3.124
6	3.152	4.852	4.281
7	3.456	4.001	2.451
8	3.485	4.154	2.548
9	3.454	4.121	2.954
10	3.471	5.125	3.101
11	3.212	4.032	3.121
12	4.215	4.112	3.512
13	4.521	3.996	3.011
14	4.987	3.954	2.312
15	3.401	4.023	2.302
16	4.123	5.121	2.754
17	3.913	4.060	3.445
18	3.845	4.834	3.012
19	3.905	4.662	2.121
20	3.154	4.521	2.421

Table S2: RSD of spectral data in experiment II.

Ra/ μm	RSD/%		
	Fe I 305.9067nm	Cr I 344.1104 nm	Ti I 383.3911nm
0.448	8.46	6.48	6.53
0.388	6.35	4.76	5.24
0.308	8.38	3.98	5.36
0.216	9.11	7.04	6.52
0.172	8.29	5.06	6.05
0.147	11.00	6.01	7.56
0.133	8.59	4.74	7.32
0.121	8.41	6.30	7.21