Supporting Figures

Figure captions

Figure S1 XPS spectra of the sample formed at 180°C for 5 h using 1.5g of AA. A) A survey spectrum, B) a high-resolution spectrum of Fe2p, C) a high-resolution spectrum of O1s, and D) a high-resolution spectrum of C1s.

Figure S2 Room temperature magnetic hysteresis plots of the iron oxide nanostructures grown without and with AA at with different hydrothermal conditions. A) Hematite, and 1.0 g, 1.5 g and 2.0 g of AA. B) With various reaction temperatures. An enlarged image of the poorly magnetized samples is also shown. C) With reaction times of 2 h, 10 h and 30 h.

Figure S3 The BET surface area of samples formed with various reaction conditions. A) AA0/180, B) AA1.0/180, C) AA1.5/180, D) AA2.0/180, E) AA1.5/120, F) AA1.5/140, G) AA1.5/160, H) AA1.5/200, I) AA1.5/2h, J) AA1.5/10h and K) AA1.5/30h.

Figure S4 TG and DSC curves of AA1.5/180 sample in N_2 atmosphere (10 °C min^{-1}).

Figure S5: Langmuir-Freundlich model fitting for AA0/180 and AA1.5/180 samples for (A) AO7 and (B) Cr(VI) removal; (C) Fitting for Cr(VI) removal with varying pH using AA1.5/180 sample.

Table TS1 The room-temperature coercivity, remnant magnetization and saturation magnetization obtained from hysteresis plots of the iron oxide nanostructures.

Table TS2 The specific surface area and TOC removal/m^2 sorbent of the porous structures, determined using BET analysis.

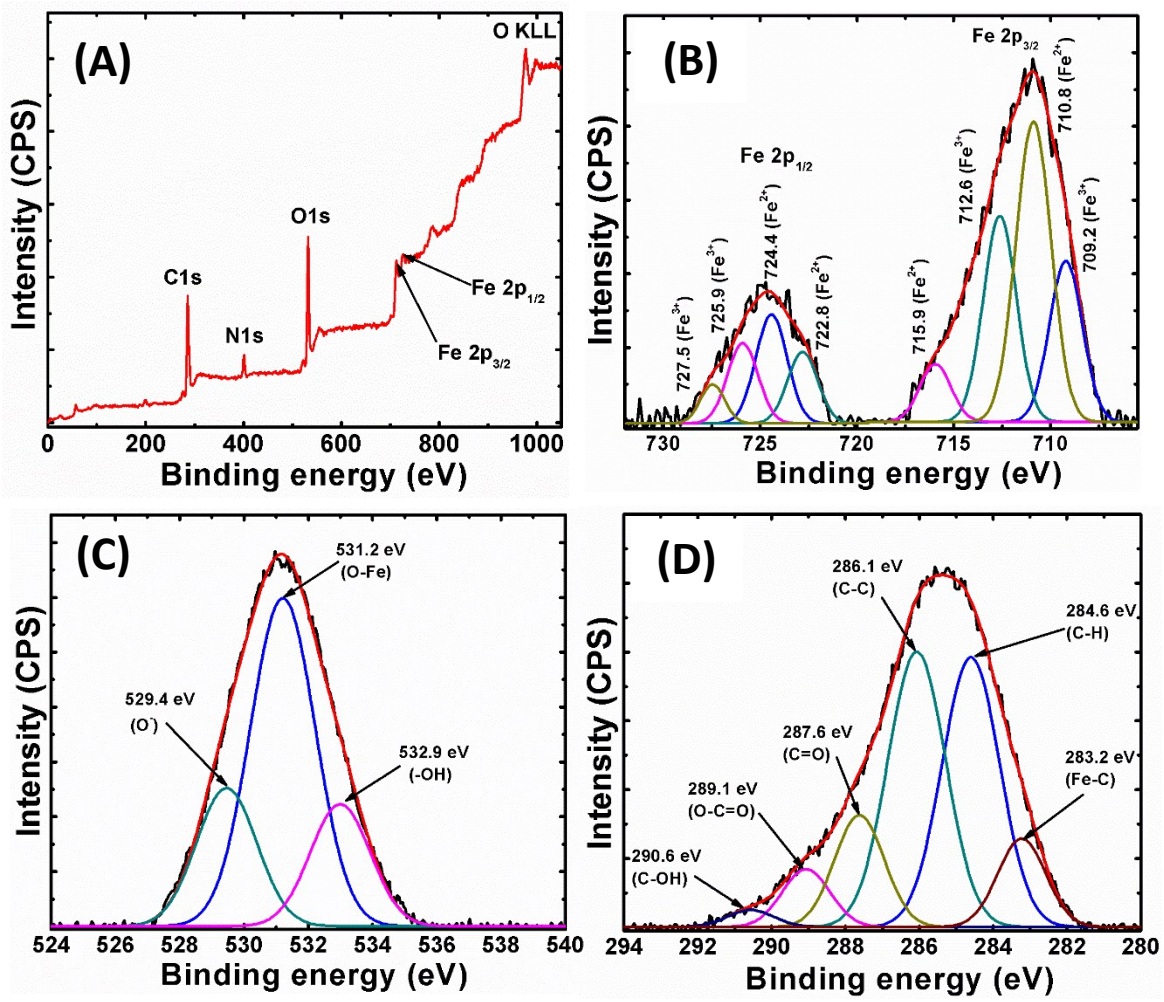
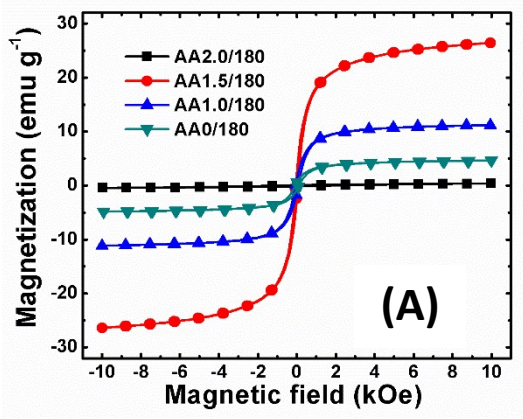
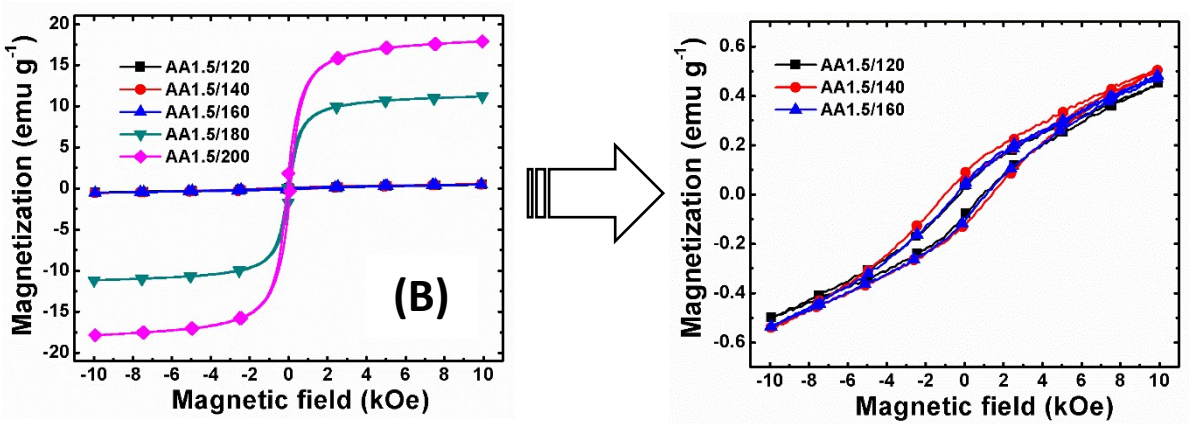


Figure S1 (A to D)





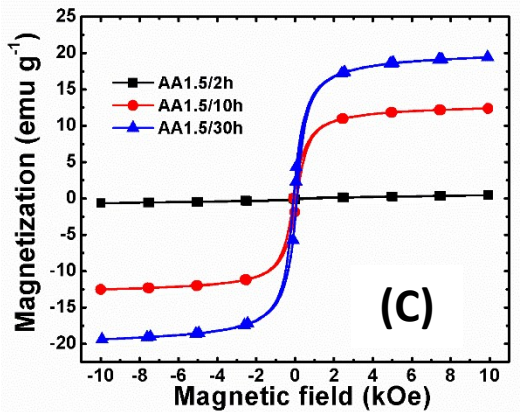


Figure S2 (A to C)

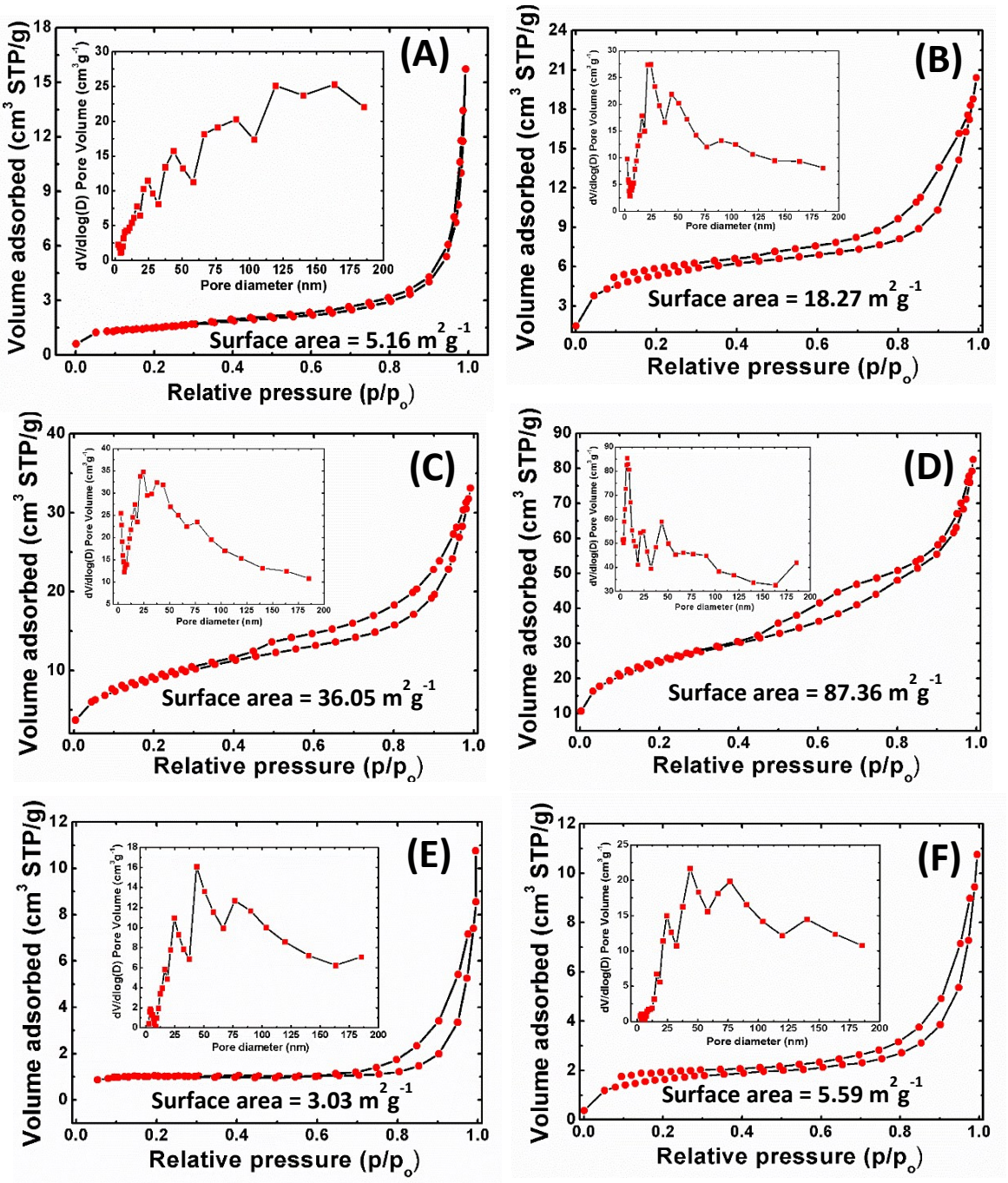


Figure S3 (A to F)

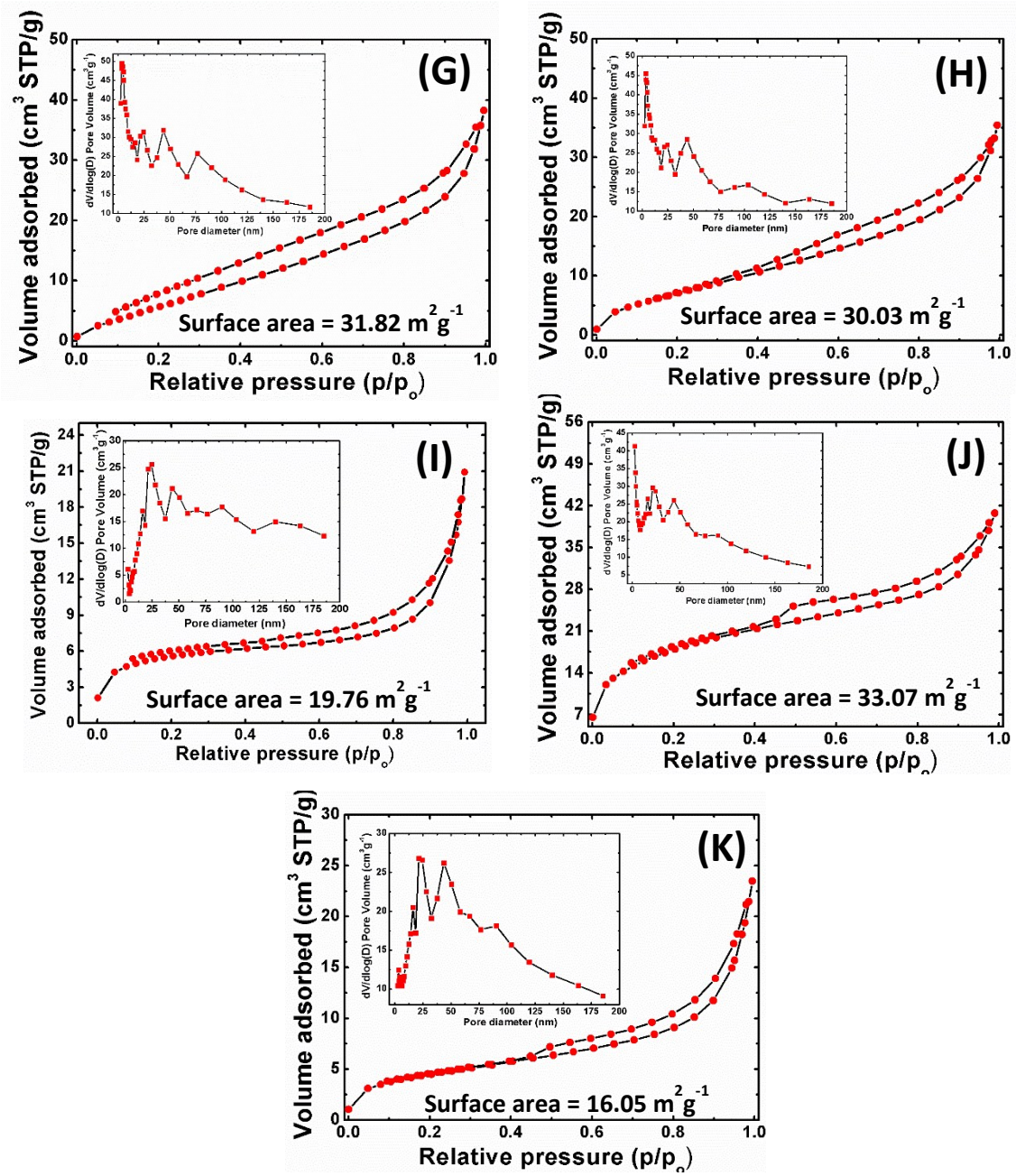
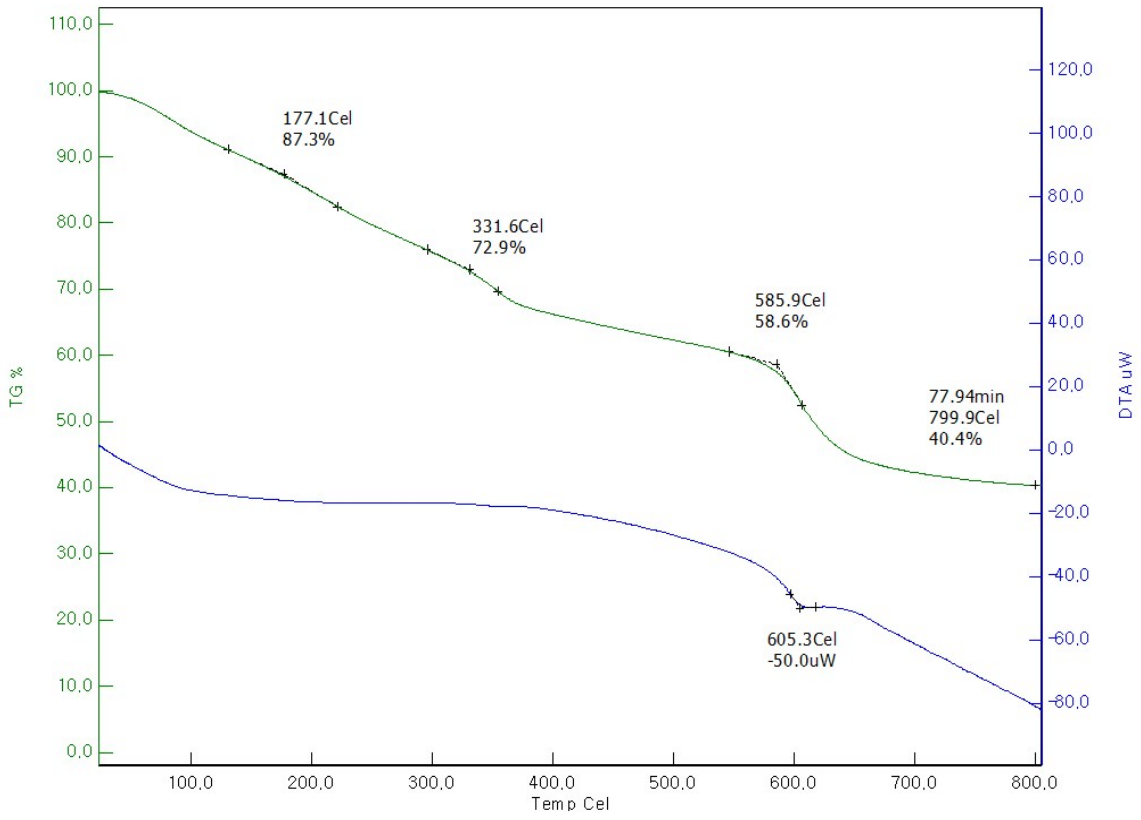


Figure S3 (G to K)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87.3%
331.6Cel
72.9%
585.9Cel
58.6%
77.94min
799.9Cel
40.4%
605.3Cel
-50.0uW
TG %
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Temp Cel
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Figure S4

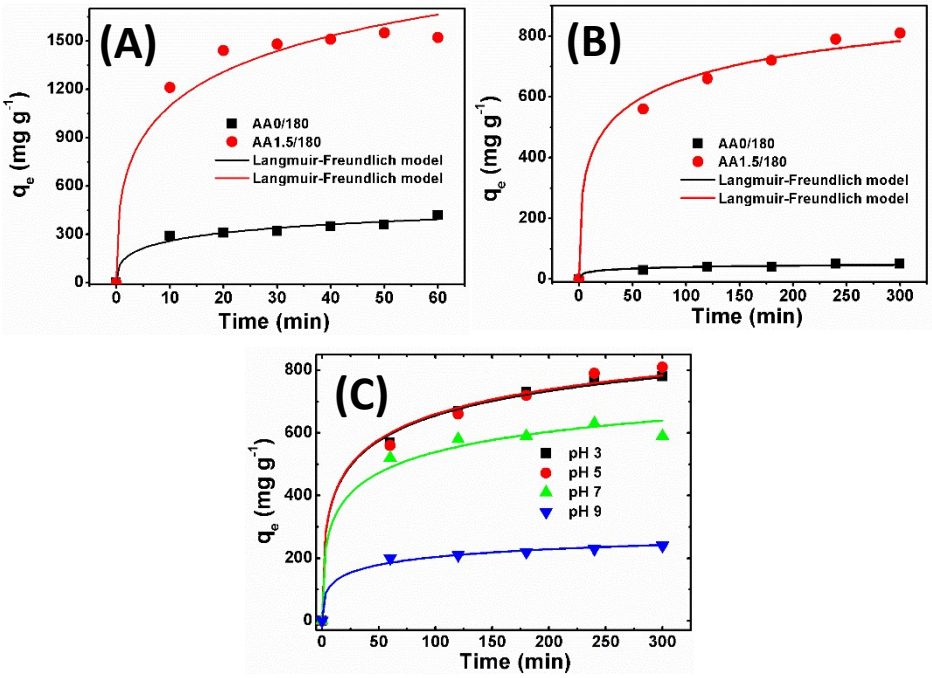

Figure S5 (A, B and C)

Samples	Coercivity Hc (kOe)	Remanent magnetization Mr (emu/g)	Saturation magnetization Ms (emu/g)
AA0/180	-814	0.064	0.354
AA1.0/180	-49	2.223	26.375
AA1.5/180	-55	1.117	11.152
AA2.0/180	-77	0.567	4.577
AA1.5/120	-266	0.037	0.446
AA1.5/140	-1028	0.087	0.506
AA1.5/160	-467	0.048	0.479
AA1.5/200	-83	2.126	17.829
AA1.5/2h	NA	NA	NA
AA1.5/10h	-76	1.343	12.330
AA1.5/30h	-90	2.647	19.301

Table TS1

Sample Name	Hydrothermal Temperature	Surface Area m^2g^{-1}	AO7-removed/m^2-sorbent
AA0/180	Without AA	5.16	631.20
AA1.0/180	1.0g	18.27	186.15
AA1.5/180	1.5g	36.05	102.88
AA2.0/180	2.0g	87.36	27.22
AA1.5/120	120 °C	3.03	919.47
AA1.5/140	140 °C	5.59	520.93
AA1.5/160	160 °C	31.82	99.08
AA1.5/200	200 °C	30.03	113.71
AA1.5/2h	2h	19.76	154.85
AA1.5/10h	10h	33.07	109.25
AA1.5/30h	30h	16.05	217.81

Table TS2