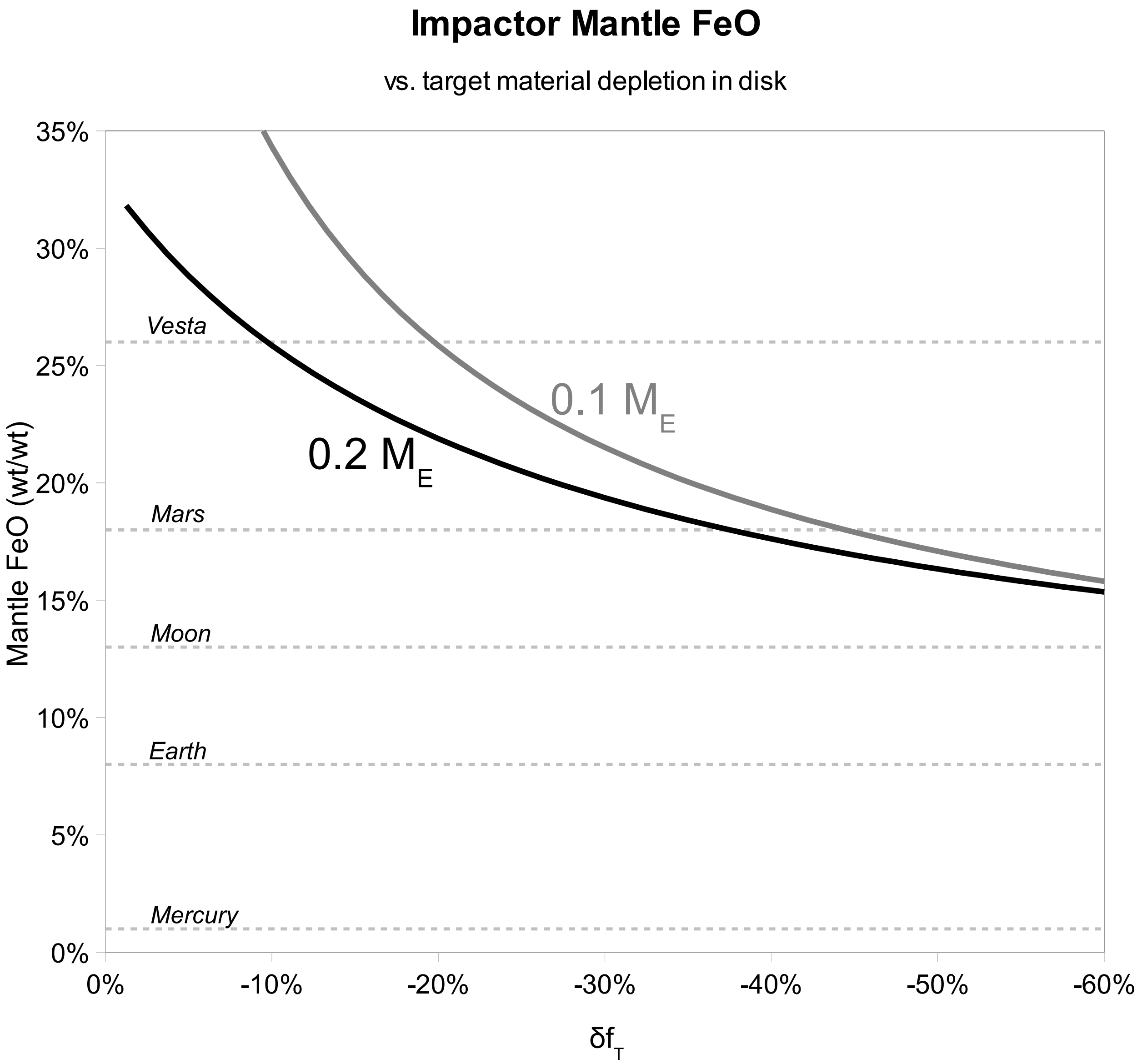
run	M_{tar} $[M_E]$	M_{imp} $[M_E]$	θ [°]	v_{imp} $[v_{esc}]$	impactor [wt% Fe/SiO_2/H_2O]	δf_T	f_T	M_{moon} $[M_L]$	L_D $[L_{E-M}]$	M_D $[M_L]$ SiO_2	Fe	H_2O	L_{bound} $[L_{E-M}]$	L_{imp} $[L_{E-M}]$
cA01	0.90	0.10	30.0	1.35	30 / 70 / 0	-18%	77%	0.03	0.02	0.12	0.00	0.00	0.67	1.04
cA02	0.90	0.10	32.5	1.30		-26%	69%	0.05	0.02	0.13	0.01	0.00	0.70	1.07
cA03	0.90	0.10	32.5	1.50		-35%	61%	0.10	0.03	0.18	0.02	0.00	0.57	1.24
cA04	0.90	0.10	35.0	1.30		-36%	60%	0.16	0.05	0.23	0.06	0.00	0.68	1.14
cA05	0.90	0.10	35.0	1.35		-36%	61%	0.20	0.06	0.26	0.07	0.00	0.64	1.19
cA06	0.90	0.10	35.0	2.00		-31%	68%	0.02	0.01	0.09	0.01	0.00	0.33	1.76
cA07	0.90	0.10	45.0	1.00		-49%	46%	0.53	0.14	0.81	0.00	0.00	0.95	1.08
cA08	0.90	0.10	48.0	1.00		-66%	31%	1.50	0.28	1.27	0.00	0.00	0.97	1.14
cA09	0.90	0.10	50.0	1.00		-66%	32%	0.68	0.15	0.80	0.02	0.00	0.94	1.18
cA10	0.90	0.10	53.0	1.00		-75%	23%	0.89	0.21	0.96	0.15	0.00	0.96	1.23
cB01	0.90	0.15	32.5	1.15	30 / 70 / 0	-41%	53%	0.10	0.03	0.23	0.00	0.00	1.06	1.49
cB02	0.90	0.15	35.0	1.15		-35%	58%	0.23	0.06	0.37	0.01	0.00	1.10	1.59
cB03	0.90	0.15	35.0	1.20		-33%	60%	0.53	0.15	0.86	0.05	0.00	1.06	1.66
cB04	0.90	0.15	40.0	1.10		-41%	53%	1.20	0.27	1.41	0.04	0.00	1.16	1.71
cC01	0.90	0.20	30.0	1.30	30 / 70 / 0	-34%	57%	0.52	0.16	1.00	0.06	0.00	1.20	2.18
cC02	0.90	0.20	32.5	1.20		-30%	61%	0.90	0.27	1.63	0.03	0.00	1.40	2.16
cC03	0.90	0.20	32.5	1.25		-37%	54%	1.01	0.27	1.51	0.06	0.00	1.27	2.25
cC04	0.90	0.20	32.5	1.30		-32%	58%	1.12	0.27	1.39	0.14	0.00	1.30	2.34
cC05	0.90	0.20	35.0	1.15		-36%	54%	1.32	0.35	1.98	0.03	0.00	1.46	2.21
cC06	0.90	0.20	35.0	1.20		-35%	56%	1.24	0.29	1.60	0.01	0.00	1.28	2.31
cC07	0.90	0.20	45.0	1.00		-54%	39%	1.30	0.31	1.61	0.06	0.00	1.74	2.37
cC08	0.90	0.20	50.0	1.00		-76%	20%	3.16	0.65	2.84	0.37	0.00	2.02	2.57
fA01	0.90	0.20	30.0	1.30	50 / 50 / 0	-28%	64%	0.95	0.29	1.50	0.37	0.00	1.40	2.16
fA02	0.90	0.20	35.0	1.20		-28%	63%	1.18	0.26	1.20	0.13	0.00	1.55	2.28
fA03	0.90	0.20	32.5	1.25		-31%	62%	1.16	0.29	1.41	0.25	0.00	1.48	2.23
fA04	0.90	0.20	35.0	1.25		-24%	67%	1.33	0.29	1.22	0.26	0.00	1.57	2.38
fA05	0.90	0.20	40.0	1.10		-33%	59%	1.17	0.29	1.56	0.09	0.00	1.68	2.34
fB01	0.90	0.10	30.0	1.35	70 / 30 / 0	-23%	74%	0.03	0.02	0.08	0.05	0.00	0.74	1.01
fB02	0.90	0.10	35.0	1.30		-28%	69%	0.38	0.11	0.37	0.30	0.00	0.78	1.12
fB03	0.90	0.10	40.0	1.10		-25%	73%	0.31	0.10	0.46	0.16	0.00	0.85	1.06
fB04	0.90	0.10	45.0	1.00		-19%	78%	0.39	0.11	0.59	0.12	0.00	0.89	1.06
fB05	0.90	0.10	48.0	1.00		-33%	64%	0.72	0.18	0.51	0.54	0.00	0.97	1.12
fB06	0.90	0.20	30.0	1.30		-19%	75%	1.48	0.37	1.40	0.68	0.00	1.47	2.13
fB07	0.90	0.20	30.0	1.35		-18%	76%	1.63	0.38	1.38	0.71	0.00	1.48	2.21

SOM Table 1.: Simulation results. Note that L_D and M_{moon} estimated according to (Kokubo 2000) considers all disk material, including any present iron and water ice.

run	M_{tar} [M_E]	M_{imp} [M_E]	θ [°]	v_{imp} [v_{esc}]	impactor [wt% Fe/SiO_2/H_2O]	δf_T	f_T	M_{moon} [M_L]	L_D [$L_{E\text{-}M}$]	M_D [M_L] SiO_2	Fe	H_2O	L_{bound} [$L_{E\text{-}M}$]	L_{imp} [$L_{E\text{-}M}$]
iA01	0.90	0.20	15.0	1.50	15 / 35 / 50	-6%	84%	-0.13	0.02	0.21	0.00	0.08	0.75	1.35
iA02	0.90	0.20	25.0	1.30		-26%	66%	0.17	0.09	0.47	0.00	0.19	1.12	1.92
iA03	0.90	0.20	25.0	1.35		-23%	69%	0.15	0.08	0.41	0.00	0.18	1.08	1.99
iA04	0.90	0.20	25.0	1.50		-16%	76%	0.07	0.07	0.47	0.00	0.16	0.92	2.21
iA05	0.90	0.20	25.0	1.75		-24%	71%	0.17	0.07	0.38	0.01	0.11	0.60	2.58
iA06	0.90	0.20	30.0	1.00		-20%	71%	0.20	0.10	0.20	0.00	0.52	1.28	1.74
iA07	0.90	0.20	30.0	1.15		-52%	43%	0.76	0.21	0.62	0.00	0.65	1.36	2.01
iA08	0.90	0.20	30.0	1.20		-62%	34%	0.91	0.23	0.75	0.00	0.59	1.35	2.09
iA09	0.90	0.20	30.0	1.25		-20%	72%	0.36	0.11	0.33	0.00	0.35	1.15	2.18
iA10	0.90	0.20	30.0	1.30		-10%	81%	0.60	0.17	0.73	0.00	0.33	1.12	2.27
iA11	0.90	0.20	30.0	1.32		-14%	78%	0.26	0.09	0.26	0.00	0.37	1.00	2.30
iA12	0.90	0.20	30.0	1.35		-10%	82%	0.32	0.11	0.45	0.00	0.30	0.96	2.36
iA13	0.90	0.20	32.5	1.25		-15%	77%	0.71	0.19	0.56	0.00	0.56	1.01	2.34
iA14	0.90	0.20	32.5	1.30		-23%	70%	1.08	0.23	0.79	0.00	0.36	1.09	2.44
iA15	0.90	0.20	32.5	1.35		-54%	42%	2.19	0.45	1.50	0.26	0.48	1.06	2.53
iA16	0.90	0.20	35.0	1.00		-60%	36%	1.35	0.32	0.70	0.00	1.03	1.51	2.00
iA17	0.90	0.20	35.0	1.10		-30%	63%	1.61	0.37	0.92	0.00	1.07	1.42	2.20
iA18	0.90	0.20	35.0	1.15		-60%	36%	3.03	0.59	1.50	0.00	1.23	1.57	2.30
iA19	0.90	0.20	35.0	1.20		-60%	36%	2.89	0.52	1.23	0.00	0.95	1.55	2.40
iA20	0.90	0.20	35.0	1.25		-56%	40%	2.26	0.50	1.73	0.16	0.74	1.23	2.50
iA21	0.90	0.20	35.0	1.30		3%	98%	-0.01	0.00	0.02	0.00	0.02	0.48	2.60
iA22	0.90	0.20	40.0	1.15		-70%	27%	8.14	1.39	2.80	0.80	1.97	2.03	2.58
iA23	0.90	0.20	45.0	1.00		-67%	30%	2.04	0.49	1.28	0.01	1.39	1.71	2.47
iA24	0.90	0.20	45.0	1.15		-61%	37%	0.09	0.04	0.09	0.00	0.19	1.14	2.84
iA25	0.90	0.20	45.0	1.20		-1%	97%	0.01	0.01	0.03	0.00	0.05	0.35	2.96
iA26	0.90	0.20	45.0	1.25		-10%	89%	0.01	0.01	0.03	0.00	0.04	0.35	3.08
iA27	0.90	0.20	60.0	1.00		-73%	24%	0.96	0.28	0.75	0.01	0.99	1.41	3.02
iA28	0.90	0.20	60.0	1.15		0%	100%	0.00	0.00	0.01	0.00	0.02	0.16	3.48

SOM Table 1. (continued)



SOM Figure 1: The FeO content of the impactor's mantle (in wt%), if the Moon's content of 13wt% FeO is a mixture of Earth mantle (fixed at 8wt% FeO) and impactor mantle material, for an impactor of 0.2 (black line) and 0.1 (gray line) Earth masses. Note that an impactor with FeO = 18wt% (equal to Mars) yields a δf_T of -35% to -40%, a typical outcome of simulations as presented here. The mantle compositions of Mercury, Earth, Moon, Mars and Vesta are shown for comparison (Righter et al., 2006).