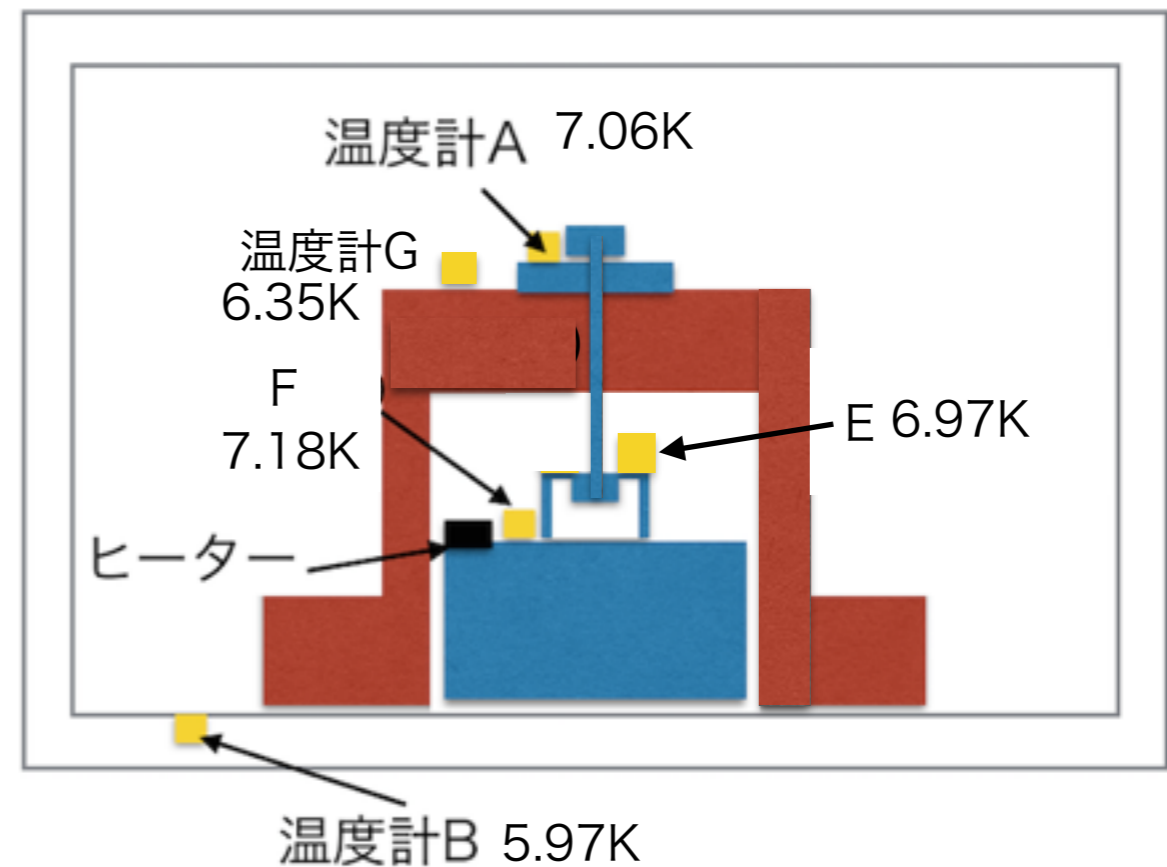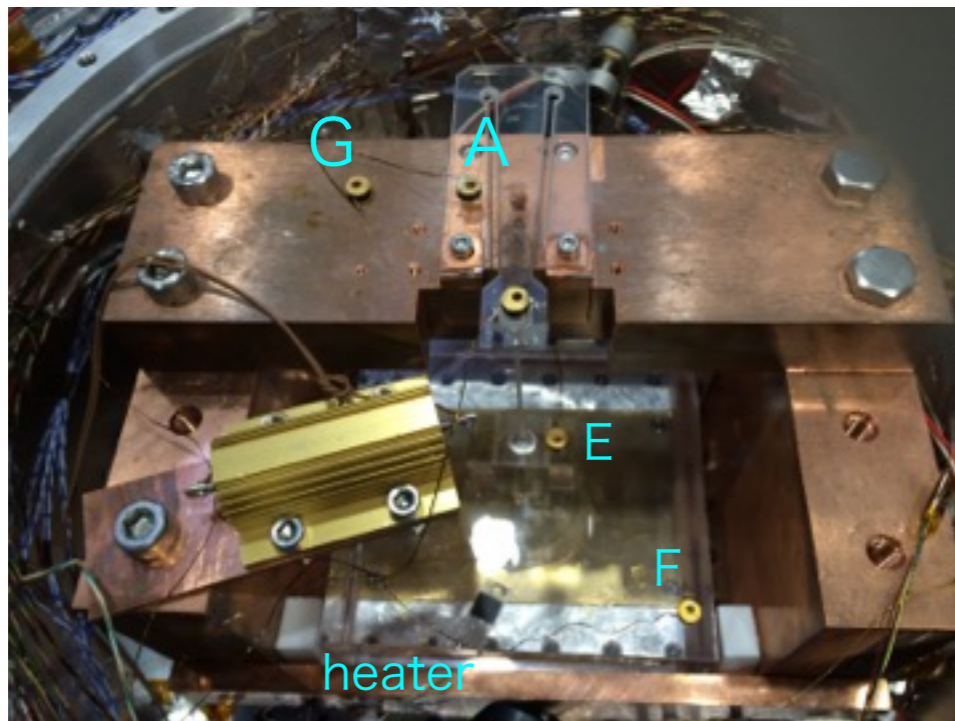# My work in 2016 3-3

Hiroki Tanaka
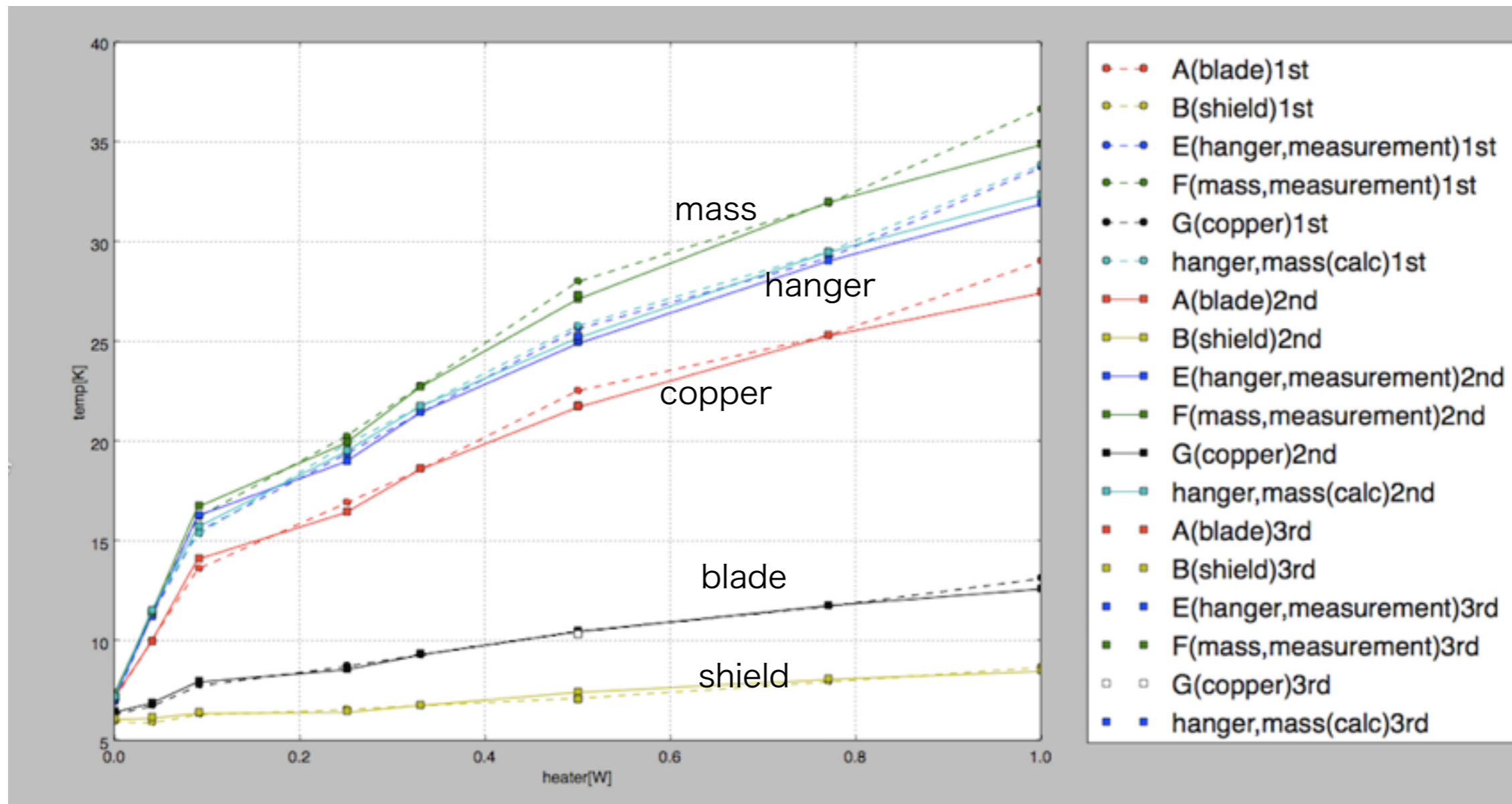
heat load test(9th)

After cooling down(before 1st test)

heat load test9th

··· 1st, — 2nd

heat load test(9th)
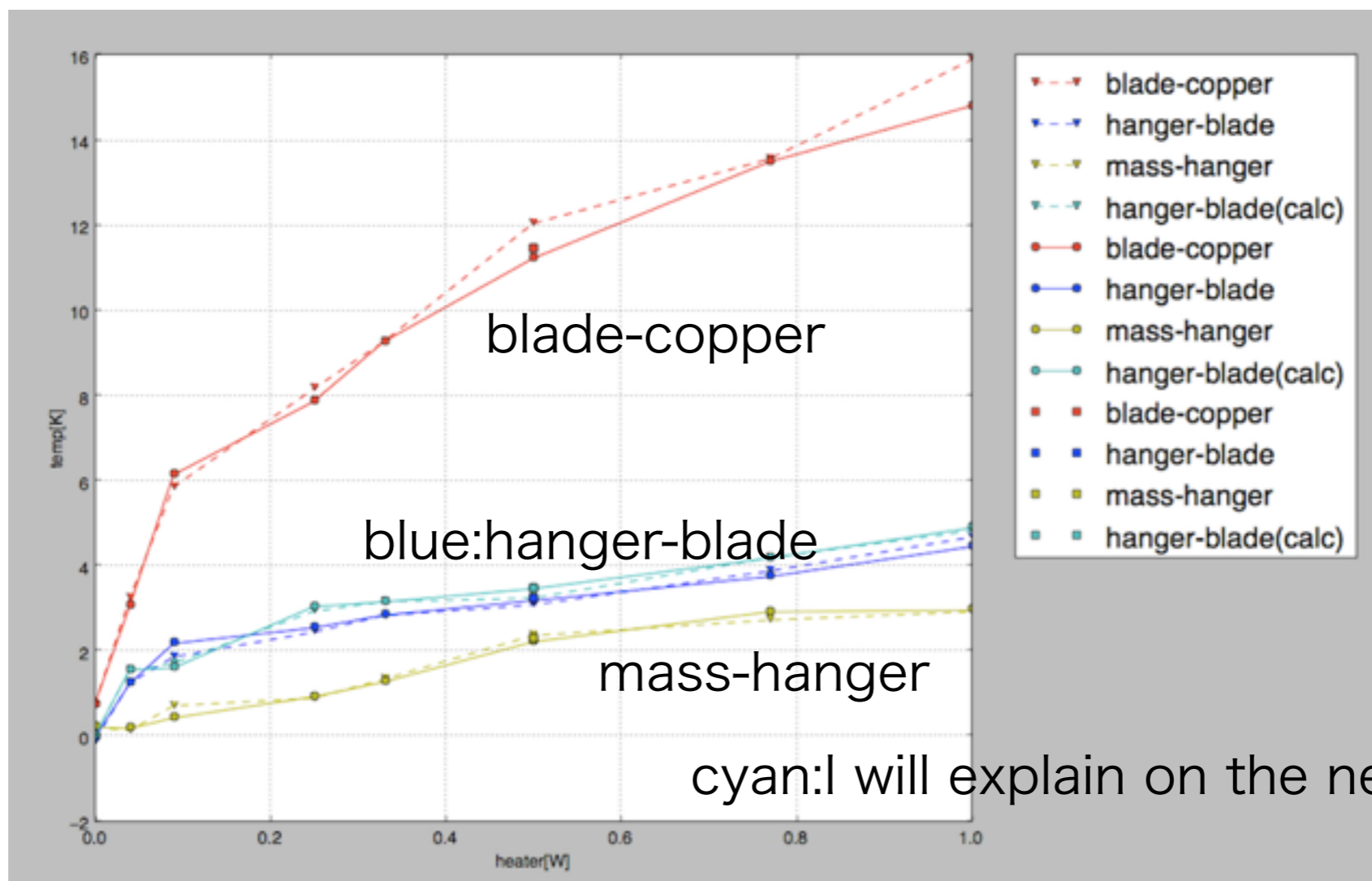
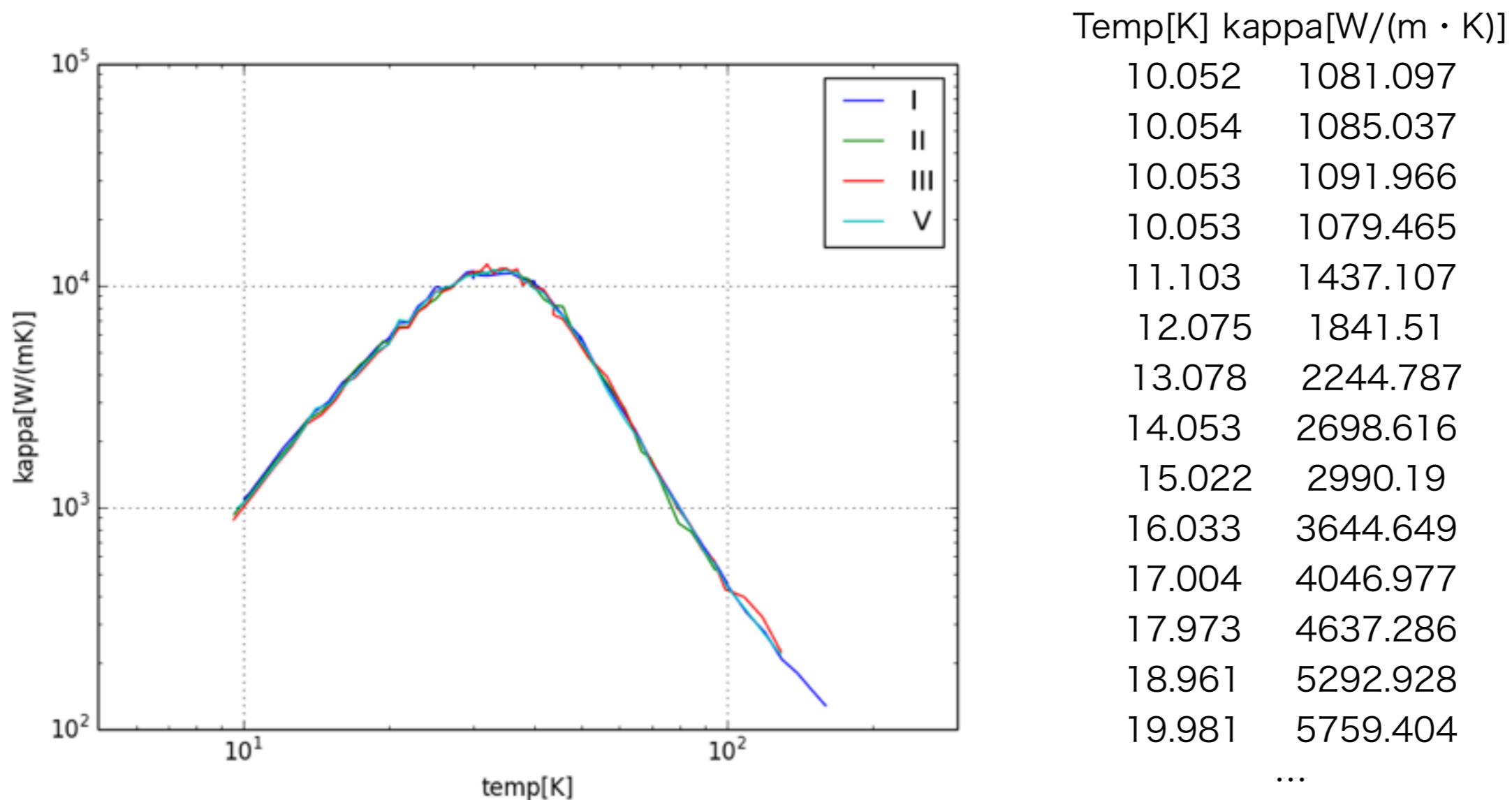| Heater[W]	Tcalc	Tmass[K]	hanger	Tblade	Tcopper	Inner shield	dTmass/dt[K/h]	dThanger/dt	dTblade/dt	dTcopper/dt	dTshield/dt
0 (1回目)		7.18	6.97	7.08	6.35	5.97	0.016	0.019	0.023	0.022	0.023
0 (2回目、260.5h)		7.37	7.15	7.19	6.45	6.09	0.016	0.018	0.018	0.02	0.018
0.04 (1回目)	11.54	11.38	11.24	9.99	6.74	5.92	-0.002	-0.002	-0.003	-0.003	-0.003
0.04 (2回目、3.7h)	11.52	11.385	11.202	9.96	6.900	6.149	0.010	0.012	0.014	0.030	0.032 (パワーを下げたのでOK)
0.09 (1回目)	15.34	16.21	15.49	13.62	7.76	6.32	0.001	-0.001	0.001	0.009	0.01
0.09 (2回目、1.09h)	15.72	16.73	16.294	14.11	7.961	6.39	0.002	0.001	0.003	0.001	0
0.25 (1回目)	19.86	20.27	19.37	16.92	8.75	6.58	-0.004	0	0.002	0.008	0.01
0.25 (2回目、286h)	19.50	19.93	19.00	16.45	8.58	6.44	-0.004	-0.002	-0.004	-0.006	-0.01
0.33 (1回目、339.32h)	21.76	22.776	21.434	18.60	9.319	6.788	-0.06	-0.014	-0.014	-0.014	-0.024
0.5 (1回目)	25.80	28.01	25.64	22.55	10.5	7.15	-0.002	0.001	0.001	0.003	0.009
0.5 (2回目、264h)	25.19	27.13	24.91	21.72	10.49	7.45	-0.01	0.002	0	0.002	0.004
0.5 (3回目、288.5h)	25.23	27.27	24.99	21.77	10.31	7.069	-0.092 (パワーを上げたのでOK)	-0.014	-0.036	-0.008	-0.008
0.77 (1回目、325h)	29.51	31.932	29.198	25.32	11.746	7.975	-0.006	0.003	-0.002	-0.003	-0.008
1 (1回目)	33.86	36.64	33.71	29.03	13.14	8.69	-0.016	0.01	0.008	0.004	-0.004
1 (2回目、281h)	32.34	34.863	31.895	27.44	12.627	8.498	-0.01	0	-0.002	-0.02	-0.046

homework5

These are the difference of the temperature between the blade and the copper, the hanger and the blade, the mass and the hanger.

⋯ 1st, — 2nd

blade-copper

blue:hanger-blade

mass-hanger

cyan:I will explain on the next page.

Thermal conductivity

Sascha sent us the data of the sapphire fiber.

| Temp[K]	kappa[W/(m・K)]
10.052	1081.097
10.054	1085.037
10.053	1091.966
10.053	1079.465
11.103	1437.107
12.075	1841.51
13.078	2244.787
14.053	2698.616
15.022	2990.19
16.033	3644.649
17.004	4046.977
17.973	4637.286
18.961	5292.928
19.981	5759.404
...	

heat load test9th

- We calculated what the temperature of the hanger and the mass should be using the temperature of the blade (sensor A).

- In order to calculate, we used the data of the thermal conductivity sent by Sascha.

homework5

The difference of the temperature between the hanger and the blade should be the cyan plots.
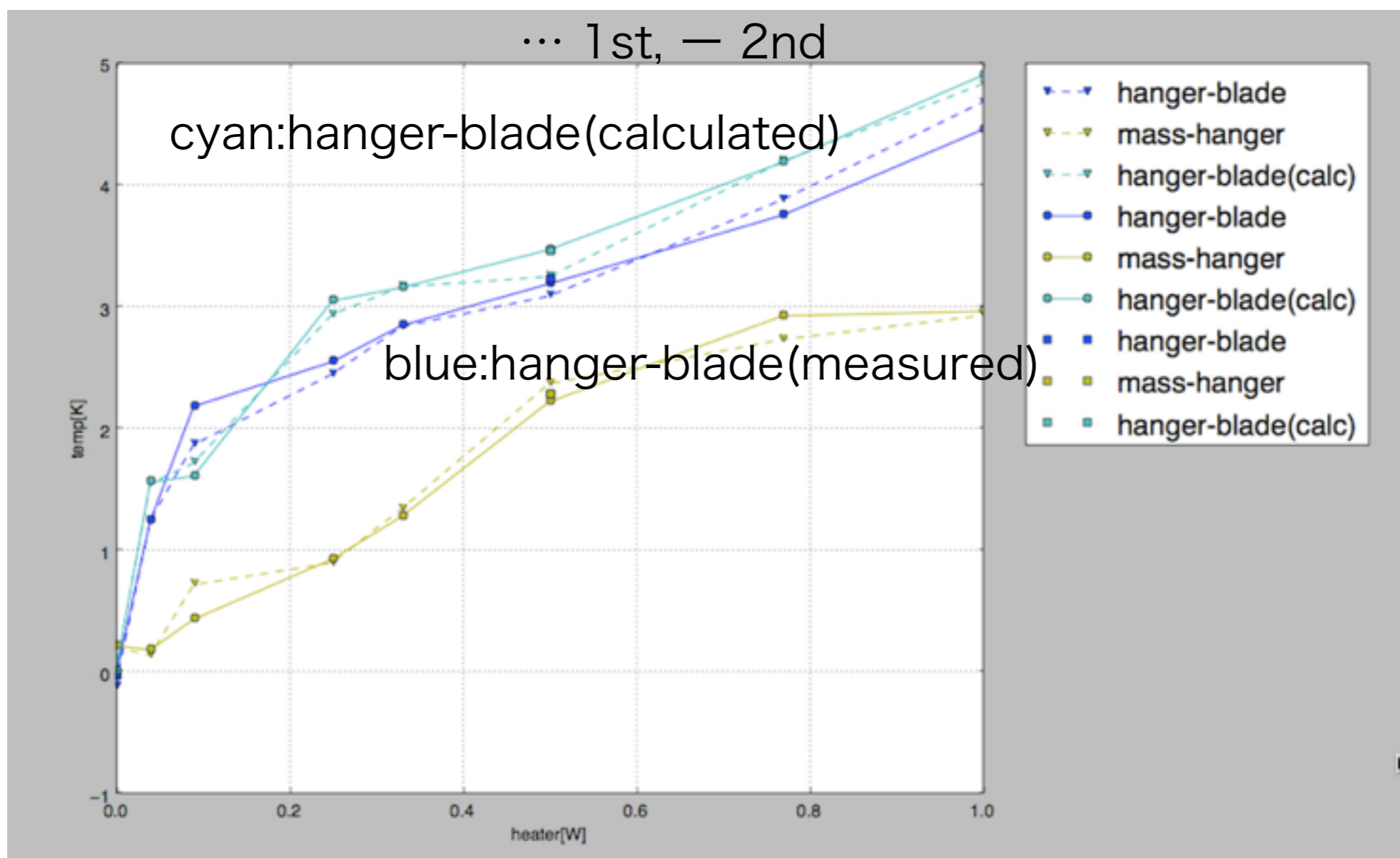
heat load test9th

- From the graph on the previous page, the thermal resistance between the blade and the mass hanger is nearly as much as we expect.

Future work1

- Tomorrow, 101 room will be arranged, so we must do the setup again.

Future work2

We will change the copper clamp to the one shown on this page to reduce the thermal resistance between the blade and the copper support.
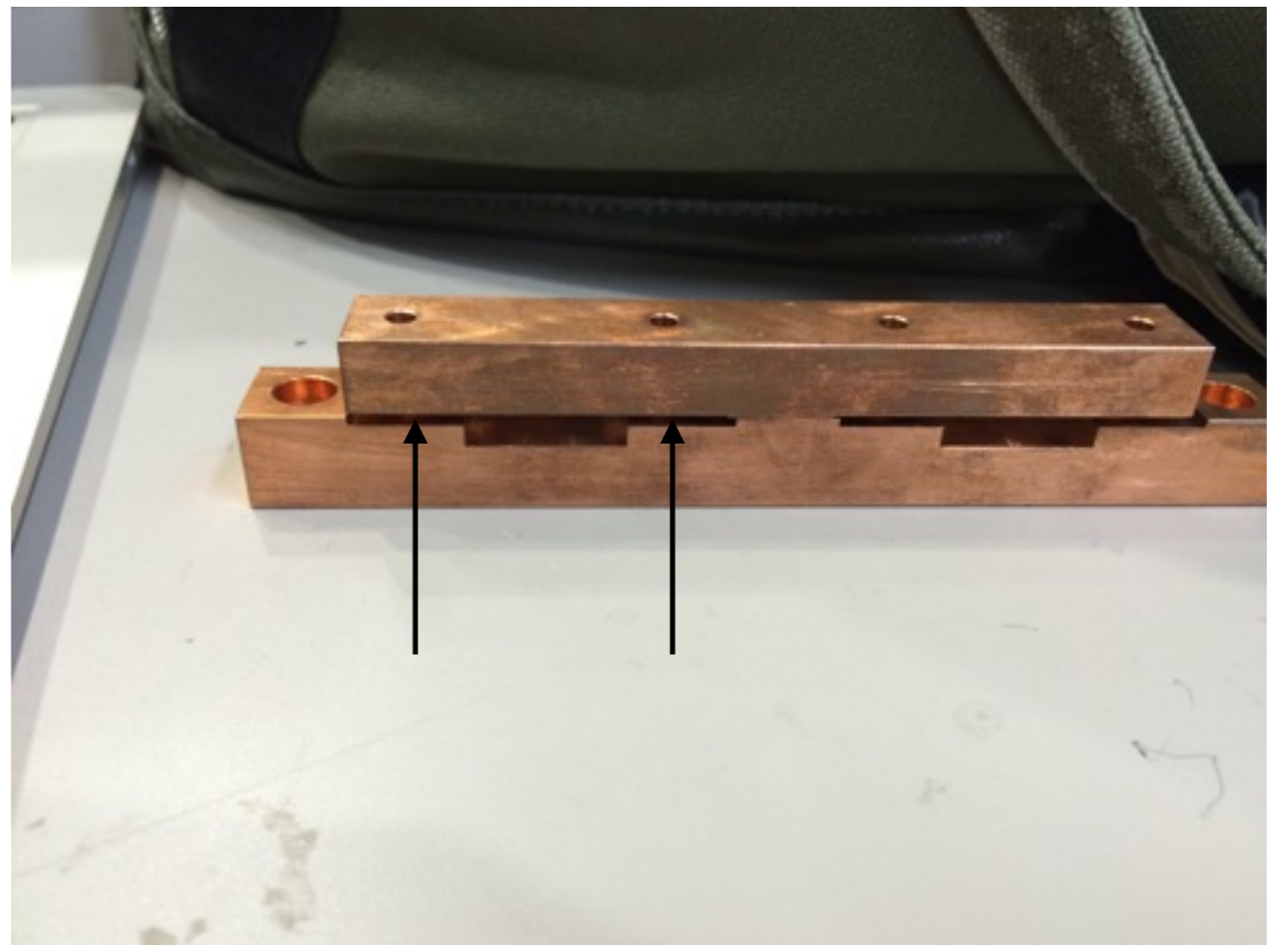
Future work2

- Now the height of the copper clamp is too tall to install into the cryostat.

- I will go to ISSP and make it short.