2011 April 15

Dear friends, colleagues, and lab students,

Five weeks have passed since the disastrous earthquake and tsunami. To me this period was very short, but perhaps it was very long for you because of my long silence. I am very sorry for letting you wait till now. I have been busy to contribute toward the recovery of our Faculty and Graduate School as the Dean from April 1. The situation in Sendai has been very much improved, so I am writing you this message.

Some of you have asked me whether the gigantic tsunami reached us… well you can see the flooded area (pink) in Fig. 1 which was presented from the Government. The tsunami was almost blocked by the highway running in parallel with the coastal line. The airport was destroyed seriously but now several flights a day are available between Tokyo and Sendai as well as Osaka and Sendai. Fortunately the famous Matsushima area seems to remain intact. I heard the main temple there was not destroyed. So you would understand that our university campus and my apartment were not damaged by the tsunami.

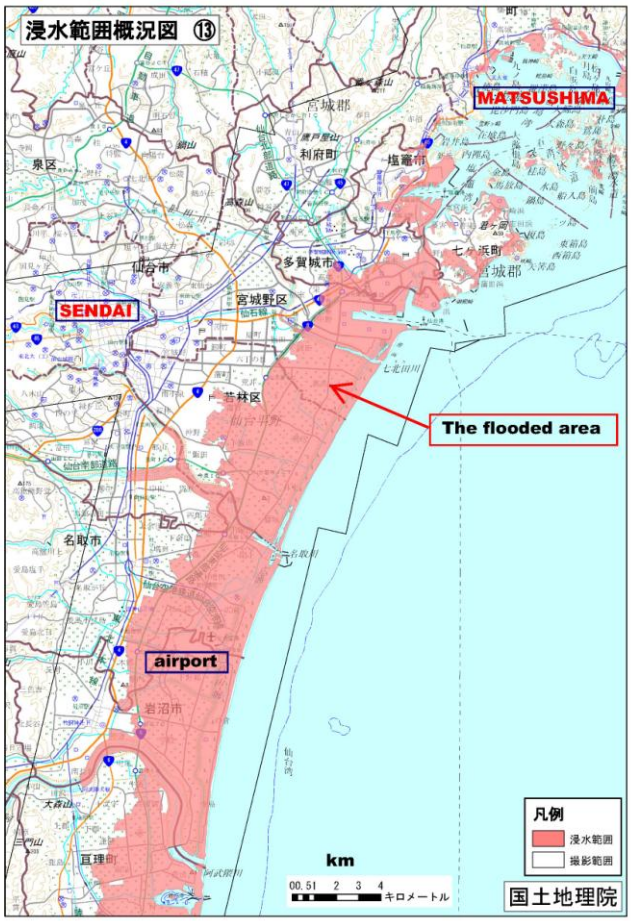

Fig. 1. The flooded area nearby Sendai

Then, how serious are the damages of our campus by the earthquake? As you may know the main building of Department of Chemistry was partly

damaged. Debris fell and was piled up at the junction between the main part of the building and the elevator hall as shown in Fig. 2.

Fig. 2. The junction of the main building at an upper floor (from the main side).

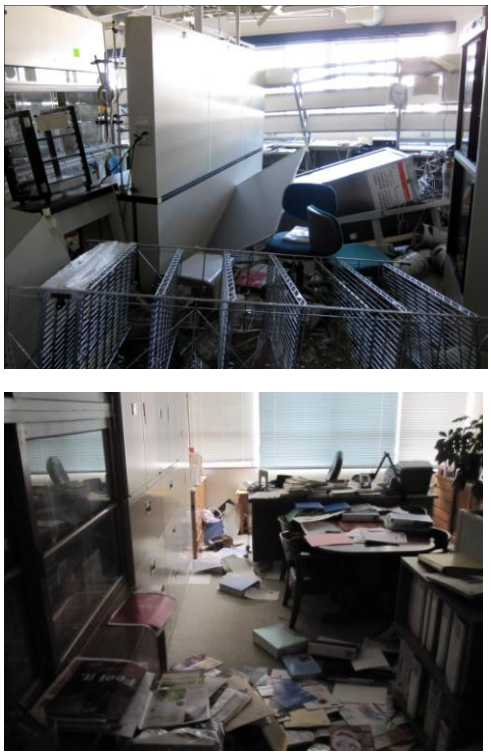

Fig. 3 Top: the inside of a lab room, Bottom: my office after the quake

The inside of all lab rooms at the main building looked horrible (Fig. 3, top) and I felt it like a miracle that nobody was injured and all students and staff members could safely escape from the mess. Fortunately nearly 3 years ago our lab has moved to the top floor of a three-story building and in this time the total damage by the quake was relatively small. You may see my office is a little untidy as usual (Fig. 3, bottom). Actually we had a meeting in our lab seminar room with a visitor from Sony Co. when the quake hit us. I jumped into my office to pick up my helmet and a flashlight there, and then came out to the corridor, shouting to students to turn off the power of all instruments. Dr. Kajimoto (assistant professor) was bravely holding two big gas cylinders there… other students were also holding things which may be broken by the big-amplitude vibration…. but nobody tried to escape from the floor during

the quake. It lasted rather long, perhaps 5 minutes or more, much longer than usual, and the vibration frequency was low as 0.5 Hz. The vibration didn't destroy a low building so much, however, people in a tall building must have been terribly shaken owing to the total move of its structure. Anyway we were very lucky indeed.

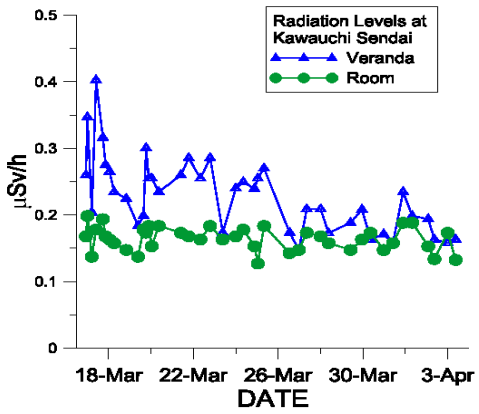

Fig. 4. Radiation levels at my apartment.

Some have asked me whether the Sendai city is safe or not. We have yet aftershocks here. According to geophysicists in our Faculty, there is a rule of thumb: the occurrence of aftershocks is inversely proportional to the time after the main quake. Now we have nearly one small quake every day, which means that five weeks from now the occurrence may be a half… still we will have aftershocks once in two days at the middle of May. Is it safe? I think it is safe because anyhow the main stress accumulated in the earth's crust has been released already. We might have a big aftershock but certainly it should be smaller in the magnitude than the main one which we could survive. What I can say here is that there is no 100% safe place in the world and we have to make efforts to reduce potential damages every day.

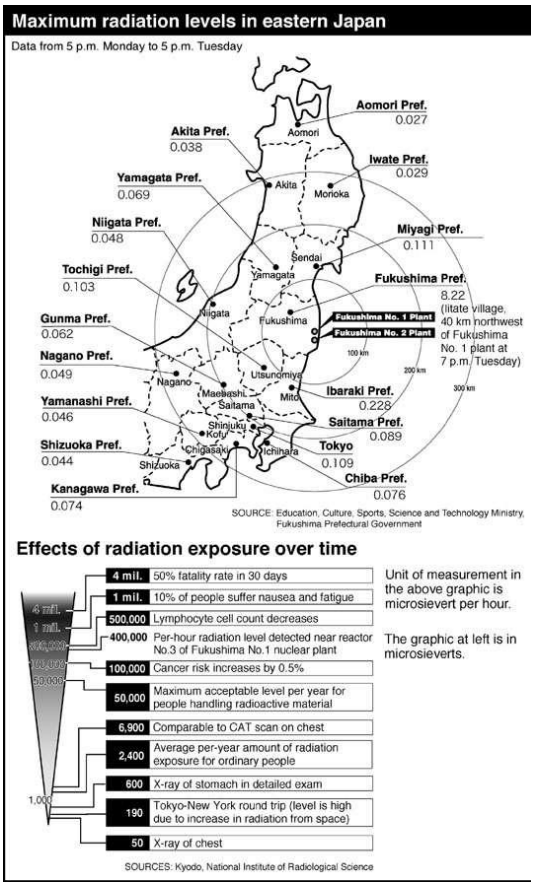

Fig. 5. An article from Japan Times.

Another concern is the situation of the nuclear power plant complex in

Fukushima. Our lab has detectors for X-ray so that we can monitor radiation levels by ourselves. Fig. 4 shows the radiation levels measured in my apartment from the middle of March to the beginning of April. As you can see, the levels were sufficiently low and even gradually decaying. Here is a map from Japan Times (Fig. 5), showing the distance between the plants and Sendai city is about 100 km. The radiation level in Sendai was also low in the map. Recently Fukushima University has reported the radiation levels from 372 points surrounding the plant complex (Fig. 6). The result suggests that geographical features and local winds affect the pollution. The area showing values higher than 2.5 micro Sv/h seems to remain within 70 to 80 km from the plant complex even at the northwest direction. To be honest, I can't predict what will happen at the plant complex, but I believe that we are safe as far as we stay here in Sendai. You may also see the effect of radiation would be negligible small from the article of Japan Times. If you live one year at a place where the radiation level is 2.5 micro Sv/h in an area in Fukushima Prefecture (not in Sendai!), the total level you would receive is 22 mSv which is still less than a half of the maximum acceptable level for people who handle radioactive materials. I think I will not leave Sendai unless a reactor vessel itself blows up. Here is a word of Marie Curie, "Nothing in life to be feared, it is only to be understood. Now is the time to understand more, so

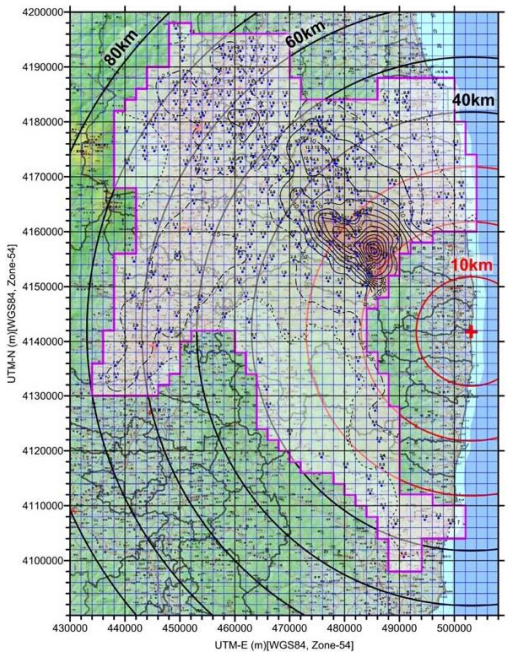

Fig. 6. Data from Fukushima Univ.


Fig. 7. Main building after the quake.

that we may fear less". If you have proper knowledge, you can prepare for any incident.

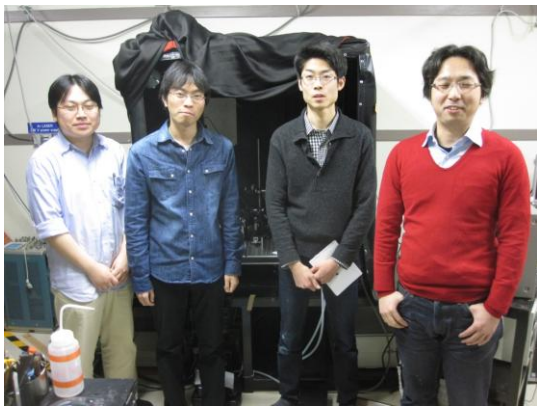

Fig. 8. Lab members I have found just after 6 p.m. April 15 in the STM room.

Fig. 9. A high power femtosec laser has been recovered by Dr. Matsushima.

Now in the most of places in Sendai city, electricity, water, and gas supplies are recovered. We do not need to make a cue to buy gasoline for cars. Super markets, shops and restaurants open nearly regularly in the city, although some debris yet remains in many places at the sea side. Fig. 7 shows the main building of our Chemistry Department after the quake. The heavily damaged junction part has been covered by gray color mesh for repair. Our lab is recovering very quickly. Dr. Kajimoto, Dr. Matsushima and a few students are working in order to check all instruments (Fig. 8). They have confirmed STM combined with Raman works well. One high power femtosec laser system for pulsed x-ray generation also works while the re-alignment of its optics is necessary (Fig. 9). Of course, there are some mechanical damages in instruments, but I believe the total loss of our instruments is lower than 300,000 euro.

Finally I would like to thank all of you for your hearty support after this disaster. What we need now is man power for recovery by any means. You may visit us to give seminars or lectures. Of course students are welcome. I wish that you consider us a usual lab doing science.

Sincerely,

Hiroshi Fukumura