



Director's Matters

By H. Frederick Dylla, Executive Director & CEO

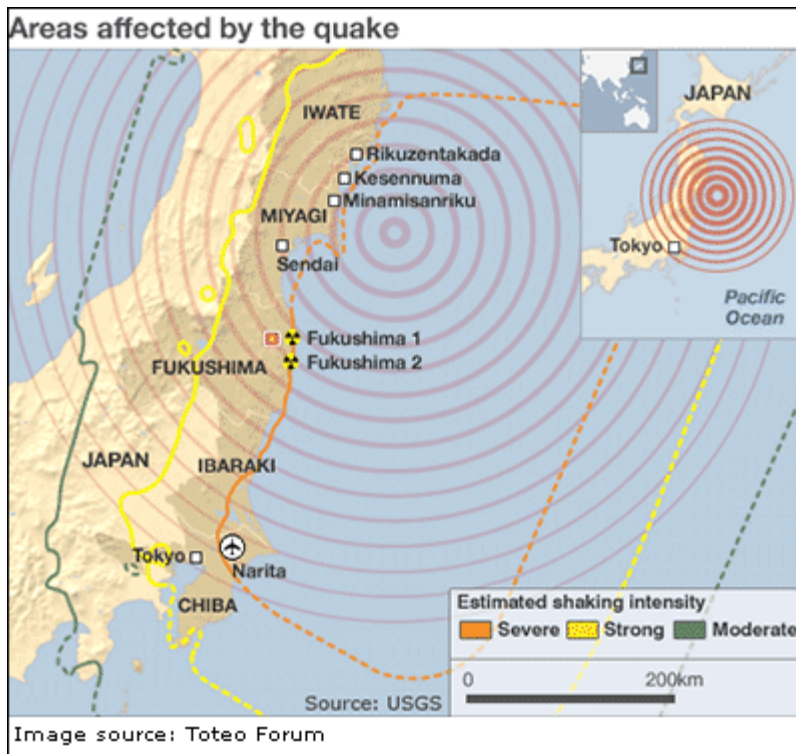
Japan on our minds

Since the afternoon of Friday, March 11, the world's attention has been riveted to the tragic and frightening events in Japan resulting from one of the largest earthquakes in recorded history. Given Japan's strict adherence to standards for earthquake-resistant structures, immediate damage was comparatively mild. But the ensuing tsunami on the northeast coast has left destruction and death that the country has not seen since World War II. As the painful search for buried victims unfolded in a corner of the country that has been completely isolated by destroyed infrastructure, the uncertainties and fears about the potential dangers of the damaged nuclear plants at Fukushima not only added to the local woes but stoked the world's fears of another nuclear catastrophe.

I have had the good fortune of visiting Japan many times and have always been impressed by many aspects of that proud nation, from its culture of exemplary politeness to its attention to education, scientific research, and quality management in manufacturing. Those values propelled Japan's post-war rebirth from nearly complete destruction to the world's second largest economy—all on an island about the size of California and having virtually no natural resources or fossil fuels. I have toured major scientific research facilities in Japan from prototype fusion reactors to state-of-the-art particle accelerators to large laser laboratories. These facilities are fine examples of partnerships between academia, government, and industry; they are world-class in every sense of the adjective—well designed, well built, and trouble free in operation.

As I write this, the full extent of the injury to the residents living near the failed nuclear reactors at the Fukushima 1 complex is not yet known. What is known is that the multiple layers of defense built into dangerous facilities such as nuclear power plants can be breached by a cascading series of unanticipated failures. The six nuclear reactors at Fukushima 1 did survive the Richter 9.0 earthquake, and they also survived the resulting powerful tsunami. However, the ongoing failure of critical cooling systems began because electric power availability from the local grid was destroyed by the geologic cataclysm and because the back-up diesel generators were flooded by the tsunami. In hindsight, the generators were poorly located in the basements of the reactor buildings. Because the reactors have containment structures around them, the eventual environmental insult of multiple plant failures will not be another Chernobyl, which involved the explosion of a nuclear plant at full power with no containment structure.

The events in Fukushima will teach the modern world how to further



enhance the safety of these plants. It is already clear that location near major fault lines or tsunami regions and colocation of spent fuels within the plants are too risky. In addition, aging plants like those in Japan, designed and built more than 40 years ago, should have additional structures for venting

overheated gases. Princeton's Frank Von Hippel pointed out such needs several years after the [Three Mile Island accident](#) in 1979, but neither the industry nor our government took his advice.?

I spent 30 years of my career working on inherently dangerous large devices—prototype magnetic fusion reactors and large particle accelerators—for frontier physics research. Those devices produced copious quantities of radiation. Since the nascent experience of the Manhattan Project, the Atomic Energy Commission and subsequently the US Department of Energy have overseen the design and operation of these facilities, and no injury or death due to radiation exposure has occurred. That can't be said for accidents due to civil construction and exposure to chemical hazards. I am in no position to predict how the issues surrounding the Fukushima plants will play out in Japan or in the court of world opinion. I would guess that the hazards to human health from those plants will be limited to the heroes who are working assiduously to stabilize them. This hazard and potential loss of life pales in comparison to those who have already perished in the tsunami and those who will continue to be killed or injured while drilling and mining for fossil fuels.

Our cacophonous news media have focused on the drama and dangers of the Fukushima plant accidents with precious little access to real data. If you would like to stay tuned to accurate reports, please see MIT's Department of Nuclear Science and Engineering [website](#).? To help our friends in Japan recover from the destruction of March 11, please donate to the [International Red Cross](#) or any of the other noble charities offering their assistance to that brave nation.

We on this side of the Pacific Ocean can learn much from the heroic perseverance of the Japanese people in such circumstances. Our nuclear officials can also learn how to better protect power plants from catastrophe.

Rocking the network

AIP Marketing and Emerging Technologies have put together a short, fun [video to promote UniPHY](#) at the upcoming APS meeting in Dallas, Texas. Enjoy, and consider how you can use this powerful social and professional networking platform to your benefit.



Introducing AIP Labs

[AIP Labs](#) is a new interactive workspace where the AIP technology team can showcase the latest plug-ins, apps, and other products they've been working on. Each product's landing page includes an interactive component, whereby we invite our community of users—researchers, professors, reviewers, and the scientific community at large—to provide feedback and suggest modifications or new products.

In the initial rollout of AIP Labs, we're offering four products that utilize today's best technology to provide practical applications and help users work more effectively. AIP may incorporate these products into one of its platforms, such as Scitation or UniPHY.

[PermaCode generator](#) – QR codes are now used to store URLs and other contact information. Researchers can use them on presentations or posters to link to articles online, and professors can include them on a course syllabus to link students directly to required reading.

[Cool Iris wall](#) – Cool Iris is a browser plug-in that takes viewers beyond the single frame of their browser and allows multiple images to appear as though they're posted on an infinite 3D wall.

[Google Chrome extensions](#)

- Scitation Search Chrome Extension lets researchers customize Scitation with the search features they use most often.
- ESVA Search Chrome Extension allows users to search our Emilio Segrè Visual Archives from any page on the web.

[iPeerReview](#) – With this app, editors and authors can use their iPhone, iPad, and iPod Touch to access information about papers they've submitted to AIP's Peer-X-Press online submission and review site and perform activities related to those papers.

Thanks go out to Cathy Bernardone, Tom Connell, Peter Reppert, James Wonder, and the other staff members whose hard work brought AIP Labs to fruition.

PHYSICS RESOURCES CENTER MATTERS

The fascinating science of biophysics



What do spider toxins, gene therapy, and hearing loss have in common? They all were the news-making stories coming out of the [55th Annual Biophysics Society Meeting](#) in Baltimore earlier this month. To help gain media coverage and increase reporter interest in the meeting, AIP's media services team researched, wrote, and sent out nearly a dozen press releases on an

amazing range of topics. Some of the most intriguing included a newly identified [spider toxin](#) that may help in treating pain and human disease, how damage to tiny [molecular "motors"](#) in the human ear may contribute to hearing loss, and how [giving viruses a bit of camouflage](#) may enable them to better deliver drugs throughout the body. The Biophysical Society is an Affiliated Society of AIP. This week (March 21–25) AIP media staff will be in Dallas, Texas, to help the American Physical Society announce the news and exciting results presented at its March meeting.

WHAT'S COMING UP?

Monday, March 21 – Friday, March 25

- **APS March Meeting (Dallas, TX)**

Important associated events for AIP

Sunday, March 20

- Corporate Associates Advisory Committee meeting

Sunday – Monday, March 20 – 2

- Industrial Physics Forum, cohosted by AIP and APS FIAP

Monday, March 21

- APS Prizes & Awards Session, including the Dannie Heineman Prize for Mathematical Physics

Tuesday, March 22

- Meet the Editors of AIP and APS reception
- *AIP Advances* Editorial Board meeting

Wednesday, March 23

- RSI Editorial Board Meeting, March 23

We invite your feedback to this newsletter via email to aipmatters@aip.org.

For past issues of this newsletter, visit the [AIP Matters archives](#).