Caught in the Act

STOPPING BREAKS BEFORE THEY HAPPEN

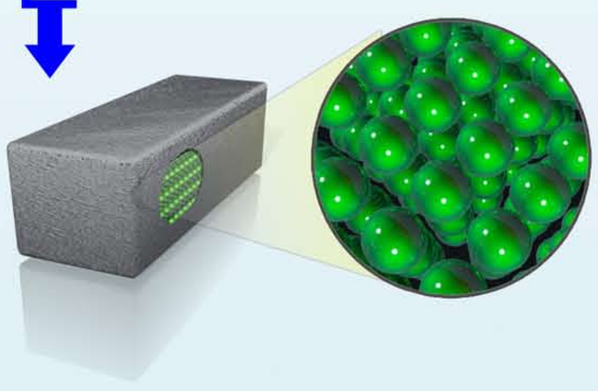
HOW DO WE MAKE ENERGY SAFER?

WHY DO THINGS BREAK?

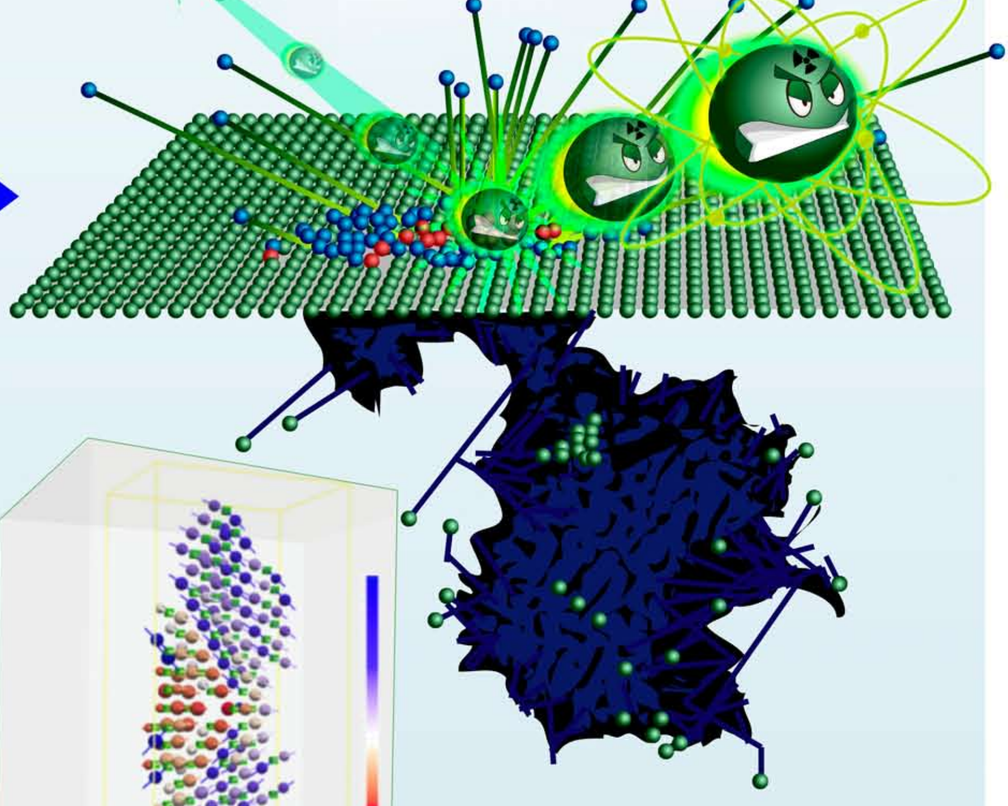
HOW CAN WE MAKE STUFF BETTER, STRONGER?

WE NEED TO UNDERSTAND WHAT HAPPENS TO ANSWER THESE QUESTIONS.

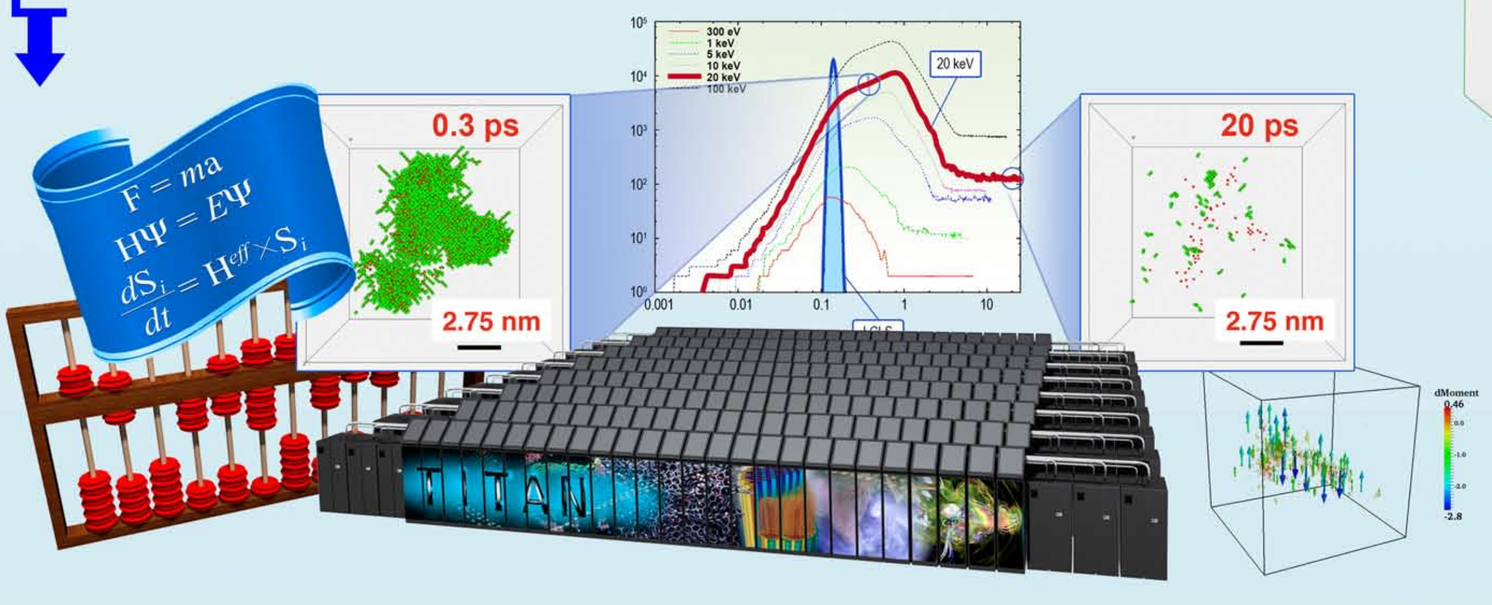
Big stuff is made up of small stuff—kind of like really tiny balls. When the balls are close together in the right place, the big stuff is strong. When the balls are not close together and out of place the big stuff can break. *So what makes the balls move out of place?*



Balls can be sitting in place together when an angry one flies in and hits another with great force. This shock can cause many other balls to quickly move out of place, going fast, getting hot, and sometimes escaping. In time things calm down, and most of the balls return to their places. The hot areas cool down and things relax.



But sometimes some balls remain out of place. Empty spaces form between the balls or many balls get together in the wrong place, which can cause new problems. The big stuff is now not as strong as it was and things may even break. *What happens?*



With a new approach, we can put numbers in a computer and more quickly watch how the balls act. We can see how things come together and begin to understand things in new and better ways. We can make changes and tell what problems go away and which remain. Then by adding new balls, or different small stuff, we can make big stuff better and stronger.