



Josh Ekstedt –Class of 2011

Josh started at ELCA in K3. He did all of his college prep work here. “Through taking advantage of the Advanced Placement courses available at ELCA, I not only started college with 25 credit hours accumulated towards my degree, but was also named “sophomore Engineering Student of the Year at the end of my first year of college.” He is now a senior at GA Tech majoring in Civil Engineering with a 4.0, currently on a scholarship from the nation of Japan to join a Japanese research team at Tohoku University in Sendai, Japan for one year.

A letter home from Josh:

*Dad,*

*We're experimenting with making concrete that uses debris from 2011 tsunami disaster as aggregate instead of the usual sand and rock. The issue is that Japan, being an island nation, does not have a lot of space for landfills. Therefore the debris needs to be recycled in some way in order to save space. Using the debris as aggregate in concrete is one such use.*

*So what we're checking is the compressive strength of the concrete, how the debris reacts with the cement, and whether or not the debris contains dangerous heavy metals. If it does contain heavy metals, we'll perform tests to see if the concrete is a sufficient barrier to keep the heavy metals from leaching into the environment. We've just gotten the experiments under way, we made our test samples for the compressive tests yesterday.*

*One thing that I'm really enjoying about the research is how hands on it is. Yesterday I personally prepared all of the samples for the X-ray Diffraction test. The purpose of an XRD test is to determine what compounds are present in the concrete after various hardening periods.*

*To prepare the samples, I used a concrete saw to slice concrete slivers*

*2 millimeters in thickness. I then had to use a vacuum chamber and Acetone to remove any water that was still present in the samples.*

*Removing the water halts the solidification process, which allows us to perform the XRD test after a precise amount of curing time.*

*Having a great time.*

*Josh*

