

Measurement of light yield of the latest FNAL injected molded cells

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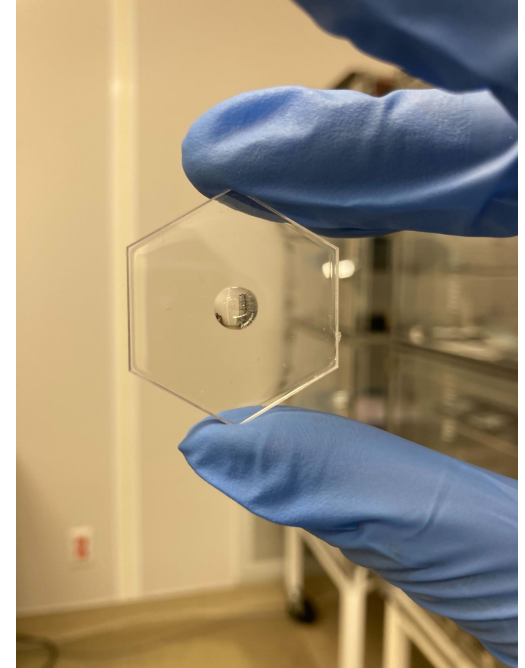
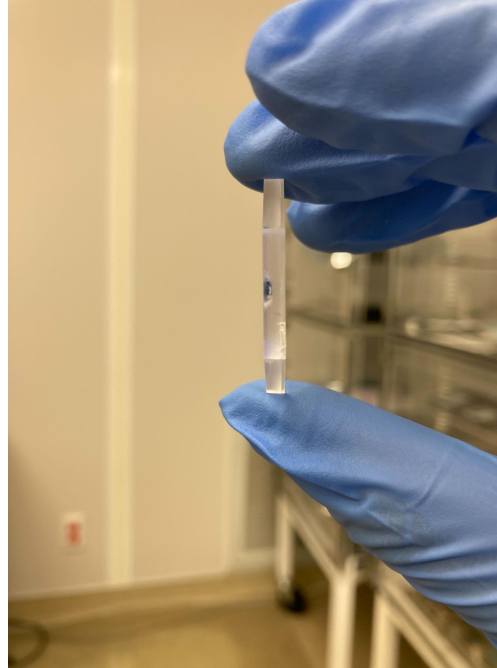
Outline

Today I will be showing the how plastic injected scintillators preform and comparing them to the scintillators we machined in UCR.

Plastic Injection Molded Scintillators

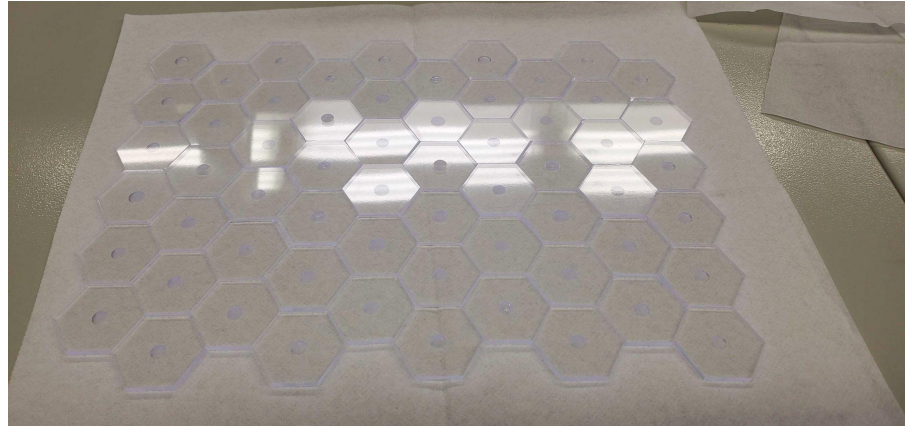
Plastic injection molded Scintillators were received from Friederike.

The scintillators were hexagonal, and appeared physically shiny. They easily fit in the boards we have been using.



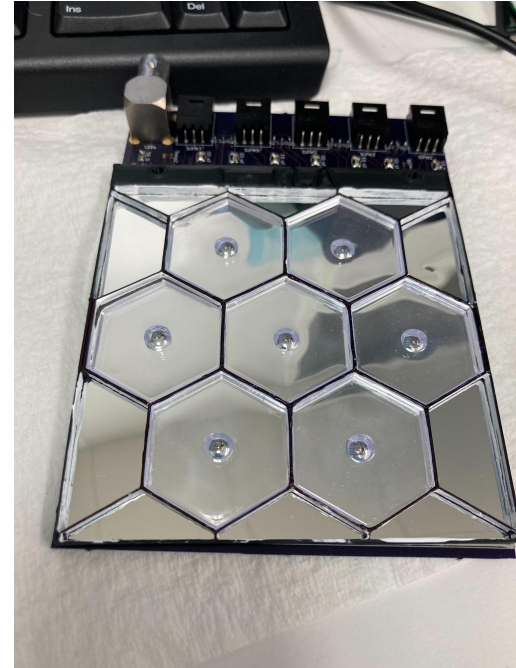
UCR Machined Scintillators

Using an Eljen Sheet of scintillating Material, we machine cut the sheet into the desired shape.



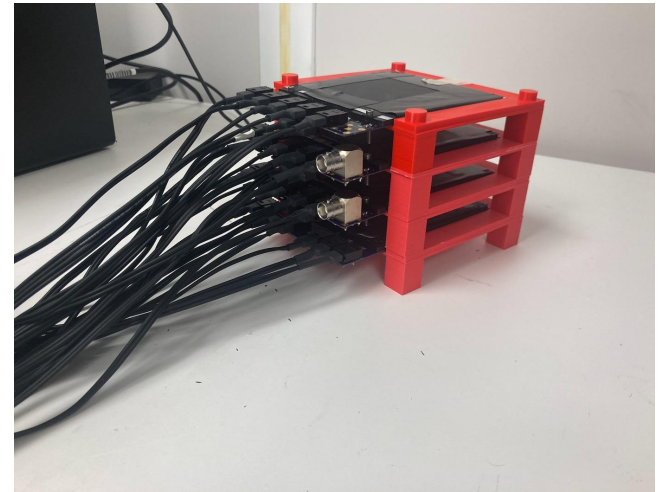
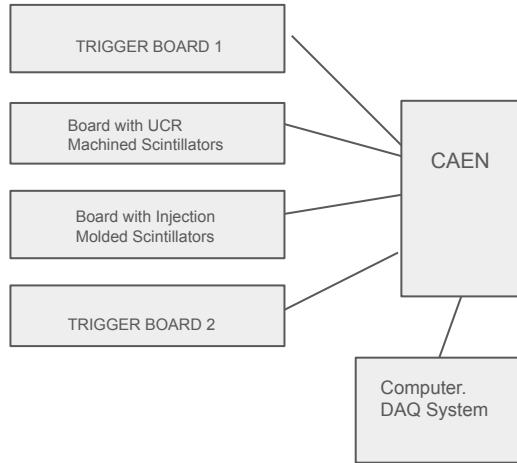
Experiment:

Two near identical PCB boards were used and compared. One board had the injection molded scintillator tiles. The other board contained the scintillators that were machined in UCR.



Experiment (continued)

Two separate boards were used as the triggers, and the two boards that were being tested were placed in the middle. Data was collected from cosmic rays over night. CAEN Unit was used for trigger with DAQ system.

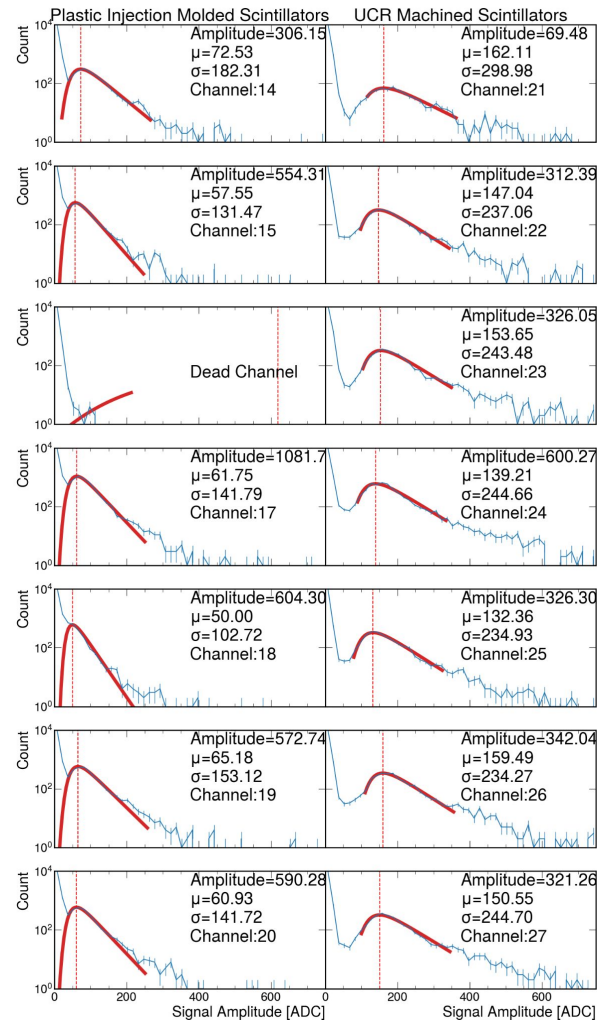


Results

After data was collected, the pedestal value was subtracted from the mean.

A cut was made in the data. All values below 4σ of pedestal peak were cut.

Results show that there is an average of 61 ADC in plastic injected molded scintillators. The machined scintillators had an average of 147 ADC.



Conclusion

Scintillators that are injected molded appear to yield 0.41 times less light than scintillators that were machined.