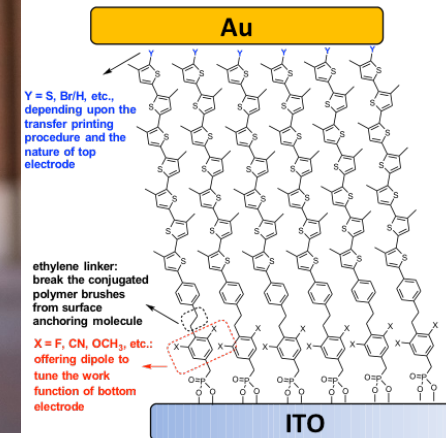


IV Characteristics of P3MT Devices

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Background and Goals

- **Background:** Organic electronics is a developing field. Applications can be seen in devices like OLEDs, organic solar cells or electrically pumped organic lasers. However, there is very little understanding of how charges actually move through polymers. The rate at which charges move through a specific polymer is known as the mobility. For charge carriers in conjugated polymers,
 - **Research Question:** What is the dominant charge transport mechanism in poly 3-methylthiophene?
 - **Relevance:** Applications of organic electronics are limited because of the relative low mobility of most devices. Our hypothesis is that by arranging polymers in an aligned fashion charge will travel through them more quickly
- **Objective:** Applications of organic electronics are limited because of the relative low mobility of most devices. Our hypothesis is that by arranging polymers in an aligned fashion charge will travel through them more quickly. We will take synchronous current and voltage measurements to test our hypothesis's model.

Results and Conclusion

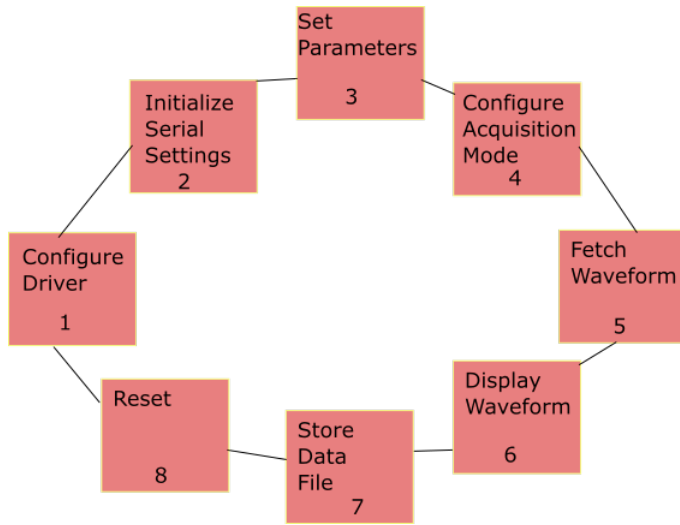


Fig. 1 oscilloscope programming flow chart

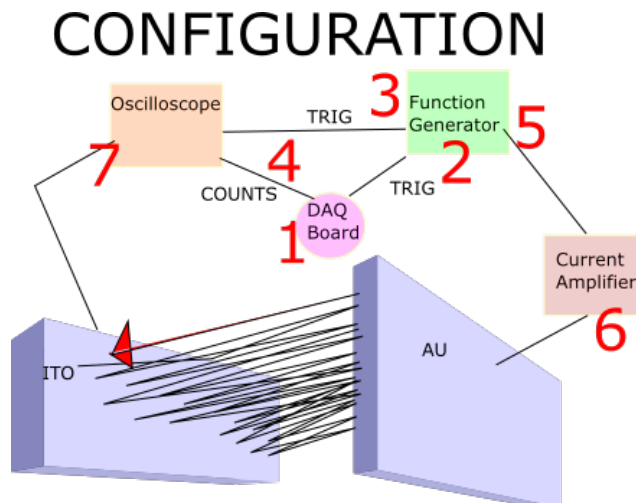


Fig. 2 The hardware setup of our experiment

Results:

- To achieve high accuracy measurements we minimized the time delay between voltage and current measurements. We programmed the oscilloscope such that we could retrieve thousands of graphs in a short time period. Figure 1. displays the programming flow chart
- We were able to take triggered wave from measurements up to one wave form at a time.

Future:

- In the future we will use this program to test the behavior of P3MT polymers. We will continue adding more features to the oscilloscope program such as a multiple waveform display. Currently, only one wave form can be displayed at a time. We are in the process of preparing P3MT samples. Once we have them then we will capture their IV curves. Then the next major goal will be to incorporate temperature variance into our measurement. Such temperature measurements have never been conducted. Now that we have the capability of completing these measurements we can take rapid IV measurements while measuring the change in temperature.