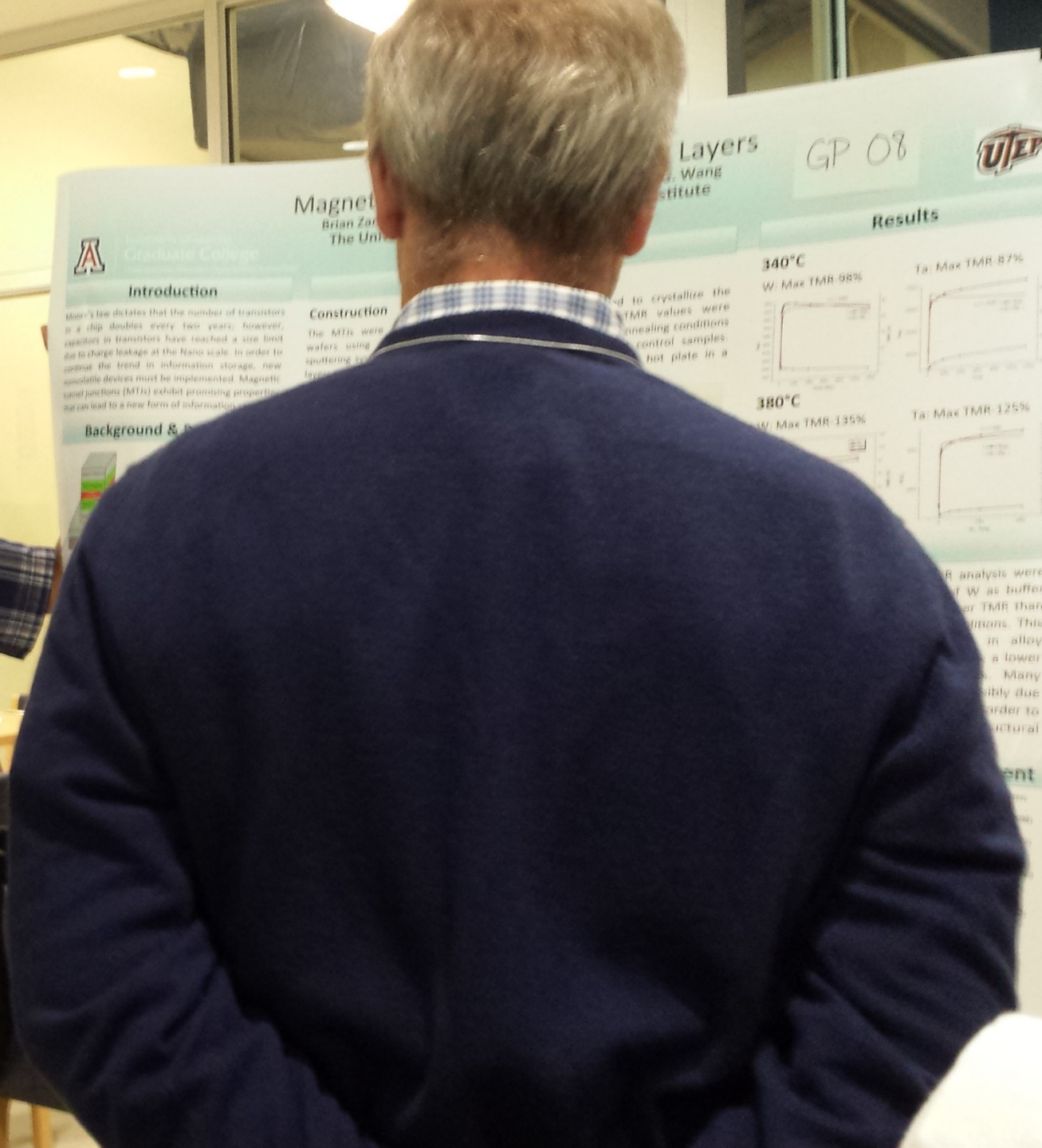
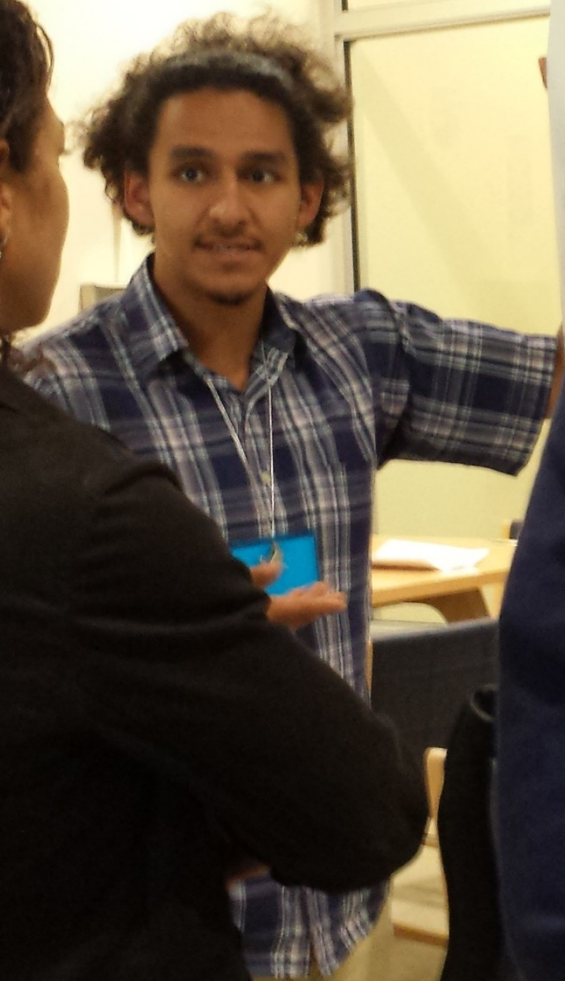



2015 Bridge Program Conference







Layers GP 08 

Magnet
Brian Zeng
The University of Texas at El Paso

Introduction
Moore's law dictates that the number of transistors in a chip doubles every two years; however, capacitors in transistors have reached a size limit due to charge leakage at the Nano scale. In order to continue the trend in information storage, new non-volatile devices must be implemented. Magnetic tunnel junctions (MTJs) exhibit promising properties that can lead to a new form of information storage.

Construction
The MTJs were grown on wafers using sputtering...

Results

Temperature	Material	Max TMR
340°C	W	98%
340°C	Ta	87%
380°C	W	135%
380°C	Ta	125%

Background & Discussion
...to crystallize the... TMR values were... annealing conditions... control samples... hot plate in a...
...R analysis were... of W as buffer... er TMR than... itions. This... in alloy... a lower... s. Many... sibly due... order to... structural...
Conclusion

UPR

NSF

Molecular structure and device fabrication using thin-films of p-benzoquinoneminoimine zwitterion/P3HT blends

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Abstract:
 The electronic structure of some p-benzoquinoneminoimine zwitterion molecular films have a definite, although small, density of states evident at the Fermi level as well as a narrow level potential and exist as well aligned to a true insulator. Photoelectron emission that is well aligned from a true insulator. Photoelectron emission that is well aligned from a true insulator. Photoelectron emission that is well aligned from a true insulator.

Results:
 For the photoemission process, self-assembled monolayers of Zwitterion/P3HT blends were deposited using Langmuir-Blodgett technique over silicon coated with gold. A layer of 100nm gold was deposited by thermal evaporation over the silicon substrate.

Photoemission Theory:
 Photoemission is a phenomena that occurs when a photon interacts with the electrons of an atom and remove it from their orbital. The process is directly related to the energy of the incident photon and the energy of the electron.

Benzyli Zwitterion/P3HT blend mobility:
 Relatively high source-drain currents can be measured on the device coated with the Benzyli Zwitterion/P3HT layer. The results out-perform the pure P3HT almost by a factor of 3. This shows a strong interaction between the P3HT and the Zwitterion on the blend. A strong pi-stacking interaction can arise from the aromatic rings of both. Benzyli Zwitterion and P3HT aromatic rings being close together, stacking interaction can be explained by a large charge density present on the Zwitterion ring, with none applicable on this DFT calculation for the benzyl aromatic rings. This allows for a more favorable exchange of charges between the molecules and hence, a higher conductivity.





Christopher
Tiller

Bernard
Torres

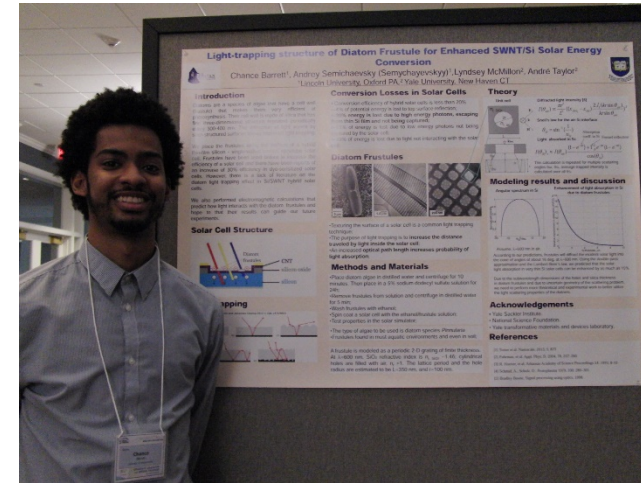
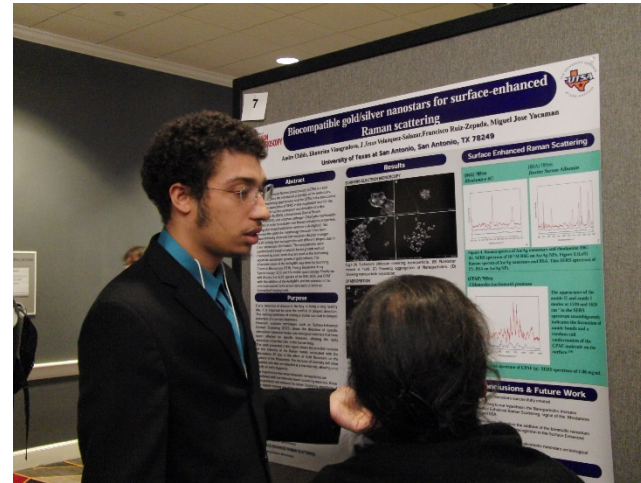
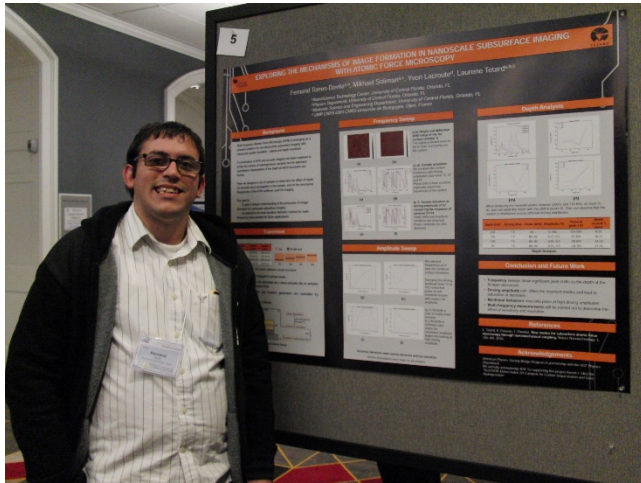
Michael
Sagapolutele

Tommy
Boykin

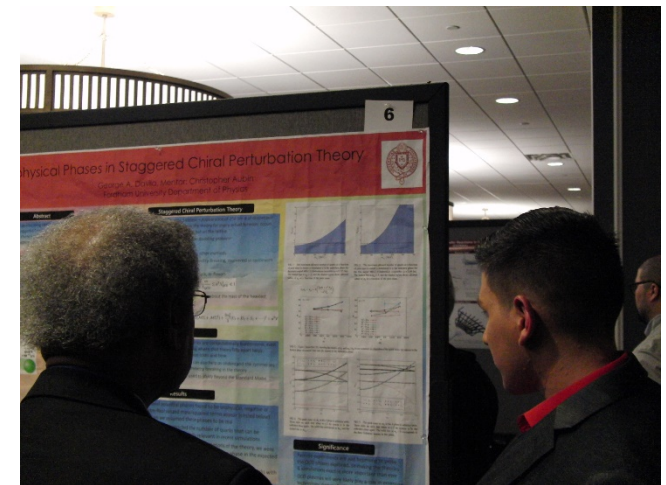
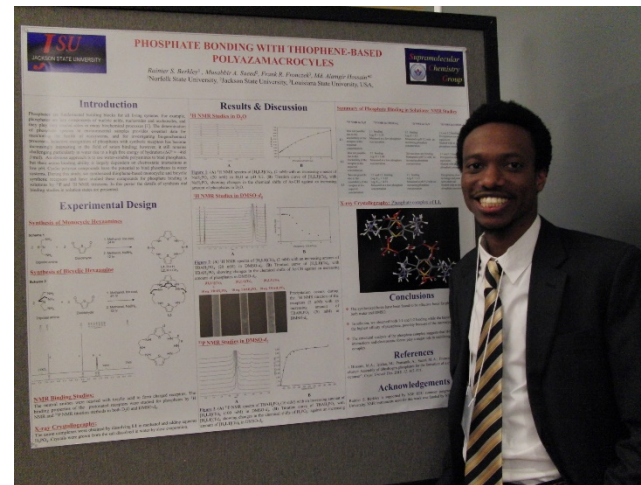
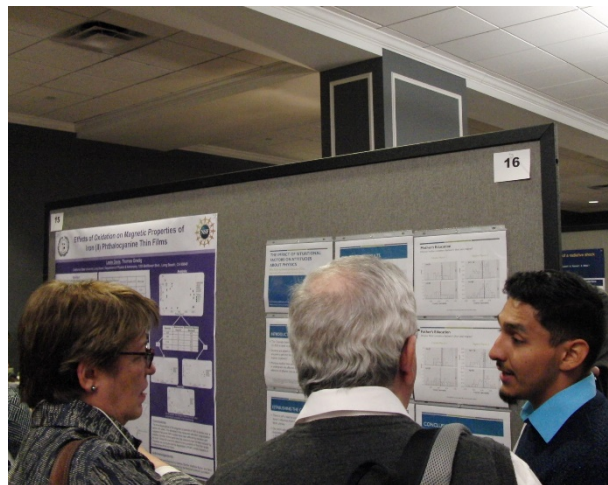


2017 Bridge Program Conference





UCF Bridge Fellows did a great job presenting their research work at the conference.





Rainier Berkley was awarded 2nd place. Way to go Rainier!!!



We enjoyed the opportunity to showcase the UCF Physics Graduate Program.

