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NEWSLETTER



June
2017

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NEW STUDENTS ORIENTATION

The Center for Student Success hosted several New Orientation Sessions for the month of June. The dates were June 12th, 13th, 15th, and 22nd. During these sessions, Dr. Flowers, Dr. Tirla, and Dr. Smith assist the students. Also, the students got to visit the classrooms and labs. Thank you, faculty, for your commitment to helping our students.



Dr. Paul Flowers



Dr. Rachel Smith



Dr. Cornelia Tirla

WORKSHOPS for MOORE COUNTY SCIENCE TEACHERS

Ms. Sally Vallabha hosted the summer workshops for the Moore County science teachers. The teachers had their kits and materials ready for use for the workshop for the Chemistry and Physics experiments. The workshop took place in the Oxendine Science Building on June 12 – 23.



HEALTH CAREERS ACCESS PROGRAM

The students: **Jullienne Lim, Aseel Abumohsen, and Yara Abumohsen** were selected and working with Ms. Natalya Locklear in the Clinic Summer Health Program. These ladies are doing the summer internship at the Southeastern Regional Medical Center hospital in Lumberton, NC.



'3 + 2' PROGRAM INTERNSHIP

Ms. Caprice Lengle, Director of Corporate and Foundation Relations in the Office of Advancement, has helped Dr. Jose D'Arruda with the '3 + 2' program internship. Dr. D'Arruda's student, **Omar Torres**, is doing his internship at the Titan Flow Control in Lumberton, NC.



Dr. Jose D'Arruda



Ms. Caprice Lengle

RISE PROGRAM INTERNSHIP

Dr. Bill Brandon is working with **Sandra Huneycutt** (RISE), **Killian M'Donald** (RISE), **Dakota Lee** (RISE), and **Kenneth Bryant** (tech support- volunteer work) with their summer research activity.

The experiments included:

Verdet Constant of Olive Oil:

In this experiment we used the phase sensitive detection abilities of a lock-in amplifier to determine the magneto-optical properties of various types of olive oil. This experiment was conducted in reference to [previous research](#) by other scientists claiming extremely large Verdet constants around 650 nm wavelength. Our results dispute this claim.

Noise measurements in PSD:

Here, we point out that a previous claim of intrinsic "leak" noise associated with an SR-830 lock-in amplifier (Am. J. Phys. **76** (7) July 2008) is due to poor experimental methodology and has absolutely nothing to do with the electronic workings of the instrument as claimed by the authors of that paper.

Pedagogical Research:

The Law of Malus is an essential background topic if one is to understand elementary aspects of experimental spectropolarimetry. Unfortunately, a commercially available educational laboratory apparatus can be cost prohibitive. In this work an inexpensive apparatus (less than \$10.00 per unit) is described assuming the availability of USB power (for the laser diode) and a digital multimeter (to monitor photocurrent). Six robust, user friendly, and functionally transparent units, affording relatively accurate data, were constructed for our introductory optics lab activities. In addition to gaining some familiarity with polarization via selective absorption and Malus' Law, these particular units consist of parts that expose students to some fundamental aspects of USB architecture and electro-optics. Finally, the data analysis methodology of the lab activity can be extended from the first year college/high school physics level to intermediate level physics using non-linear curve fitting techniques.



OUTREACH at SAINT PAULS HIGH SCHOOL

Mrs. Felicia Scott and Mrs. Carolyn Oxendine went to Saint Pauls High School on June 16th. They worked together with Ms. Tiffany Scott, our alumni, to organize the lab area and stock room for safety purposes.



Mrs. Felicia Scott



Mrs. Carolyn Oxendine

NATIONAL SCIENCE FOUNDATION INTERNSHIP

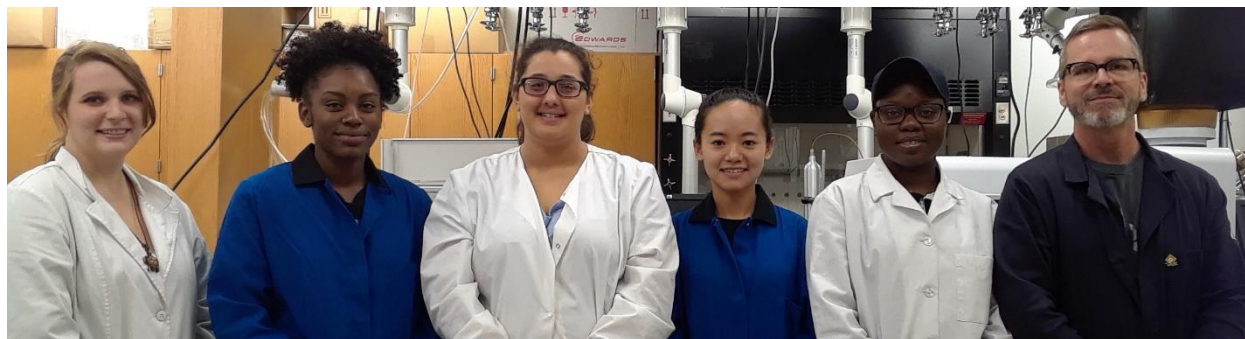
Professor Paul Flowers is working with five UNCP undergraduate students to develop new devices and procedures for microscale chemical analysis. The work supported by the National Science Foundation under grant number 150817, with supplemental support for three of the student researchers provided by the UNCP RISE program.

Kaitlan Smith and **Gabriell Greene** are developing two new assays for biomedically relevant applications: (1) measuring concentrations of a common pain reliever, acetaminophen, in pharmaceutical preparations and blood serum; and (2) determining levels of a clinically important metabolite, uric acid, in urine.

Xin Dong is investigating the feasibility of developing a similar new assay for ascorbic acid (vitamin C) in pharmaceuticals and blood serum.

Gabby Downs is studying the spectral and electrochemical traits of bilirubin in physiological fluids as prelude to development of an assay for this important diagnostic marker in blood serum and urine.

Akpedje Nadohou is fabricating and evaluating the performance of devices capable of analyzing sample volumes lesser than one microliter.



Left-to-right: Gabby Downs, Gabriell Greene, Kaitlan Smith, Xin Dong, Akpedje Nadohou, Paul Flowers.

RISE PROGRAM INTERNSHIP

Dr. Cornelia Tirla is working with her students, **Jose Acosta** and **Macie Bethea** on their summer research activity which is supported by RISE on the study of Benzoin Condensation. The research work involves investigating the synthesis of α -Hydroxy ketones through benzoin condensation by fast speeds using microwave irradiation, by using thiamine hydrochloride as the catalyst and solvent being used is water or ethanol. Though this research has been known for decades, there has only been a few known published articles on this type of reaction 1) using a domestic microwave limited to only aromatic aldehydes, and 2) using imidazolium-based ionic solid as the catalyst in a solvent-free zone. Additionally, the second research experiment was only limited to derivatives of the benzaldehyde. The main goal for the work is to be able to develop a proper protocol for many reagents like aromatic and aliphatic aldehydes, ketones, esters, and/or oximes.



Great job, Faculty and Students, for your awesome work!