

---

**UNIVERSITY OF RHODE ISLAND**  
**Department of Chemistry**  
**SEMINAR**

**Room 234 Pastore Hall**  
**3:00 p.m, Wednesday, April 6, 2016**

**Anita Oppong**

**Graduate Student**  
**Chemistry Department**  
**URI**

**“Simple Inexpensive Assay for  
Determination of Drug Quality”**

**HOST**

**Louis Kirschenbaum**  
**Department of Chemistry**  
**401-874-2340**

---

---

## SIMPLE INEXPENSIVE ASSAY FOR DETERMINATION OF DRUG QUALITY

Substandard and falsified drugs have been reported, mostly in developing countries. These drugs get to unknowing patients because there are no quick simple methods of analysis for inspectors to use to determine the quality of these drugs. Inexpensive test cards have been fabricated for fast field screening of some drugs, especially antimalarial and Beta lactam antibiotics. This presentation will discuss how these analytical devices called Paper Analytical Devices (PADs) were fabricated from paper and wax. These test papers can detect Active Pharmaceutical Ingredients APIs, binders and fillers such as chalk, talc and starch, which are not revealed by traditional methods. Each test paper is made up of lanes with a different reagent at the top of each lane. The test paper is placed in water and by capillary action brings the analyte into contact with the different reagents to trigger the different chemical test. This creates a color bar code which can be analyzed visually. Color development lasted between 3-5minutes. Although the PADs have low quantification ability, their sensitivity and selectivity is better and can store the APIs in active forms as compared to the traditional methods. Every pure API and excipient was detected with 92-100% sensitivity and selectivity of 88-100%. Amoxicillin and Ampicillin have similar structures but were reliably distinguished due to the different color bar codes produced.

- Weaver, A. A., Reiser, H., Barstis, T., Benvenuti, M., Ghosh, D., Hunckler, M., Joy, B., Koenig, L., Raddell, K., and Lieberman, M., *Anal. Chem.* **2013**, 85, 6453–6460.
- <http://www.nationalacademies.org/hmd/Reports/2013/Countering-the-Problem-of-Falsified-and-Substandard-Drugs.aspx#sthash.lGgH2Cdv.dpuf> accessed on 03/16/2016.
- Cate, D.M., Adkins, J.A., Mettakoonpitak, J., and Henry, C. S. *Anal. Chem.* 2015, 87, 19–41
- Weaver, A. A. and Lieberman, M., *Am. J. Trop. Me*