

H. Surangi N. Jayawardena (Ph.D.)

Professional Employment

Assistant Professor
Department of Chemistry, University of Alabama Huntsville

August 2017 - Present
Huntsville, AL

Postdoctoral Associate
Massachusetts Institute of Technology

November 2014 – August 2017
Cambridge, MA

Education

Ph.D. Chemistry (GPA 4.0)
University of Massachusetts, Lowell

September, 2009 - November 2014
Lowell, MA

B. Sc. (Hons.) Chemistry
University of Colombo

May 2004 – June 2008
Colombo, Sri Lanka

Awards

- 2020 Boost Idea Competition – February 2020
- iCorps - IgniteHSV Award, November 2019 – University of Alabama Huntsville
- Individual Investigator Distinguished Award May 2018 – University of Alabama Huntsville
- Charger Innovation Award, February 2018 – University of Alabama Huntsville
- New Faculty Research Award, August 2017 – University of Alabama Huntsville
- Tripathy Memorial Summer Graduate Fellowship, June 2014 - University of Massachusetts Lowell
- Outstanding Graduate Research Award, August 2014 - University of Massachusetts Lowell

Publications

- Rathnayake, K.; Patel, U.; Pham, C.; McAlpin, A.; Budisalih,.; **Jayawardena, H. S. N.** Targeted Delivery of Antibiotic Therapy to Inhibit *Pseudomonas aeruginosa* Using Lipid-Coated Mesoporous Silica Core-Shell Nanoassembly. *ACS Applied Bio Materials* **2020**.
- McHugh, K. J.; Jing, L.; Severt, S. Y.; Cruz, M.; Sarmadi, M.; **Jayawardena, H. S. N.**; Perkinson, C. F.; Larusson, F.; Rose, S.; Tomasic, S.; Graf, T.; Tzeng, S. Y.; Sugarman, J. L.; Vlastic, D.; Peters, M.; Peterson, N.; Wood, L.; Tang, W.; Yeom, J.; Collins, J.; Welkhoff, P. A.; Karchin, A.; Tse, M.; Gao, M.; Bawendi, M. G.; Langer, R.; Jaklenc, A. Biocompatible near-infrared quantum dots delivered to the skin by microneedle patches record vaccination. *Sci. Transl. Med.* **2019**, *11*, 7162.
- Ferber, S.; Behrens, A. M.; McHugh, K. J.; Rosenberg, E. M.; Linehan, A. R.; Sugarman, J. L.; **Jayawardena, H. S. N.**; Langer, R.; Jaklenc, A. Evaporative Cooling Hydrogel Packaging for Storing Biologics Outside of the Cold Chain. *Adv. Healthc. Mater.* **2018**, *7*, 1800220.
- Petagna, L.; **Jayawardana, H. Surangi, N.**: Knowledge-Driven Vaccine Systems Engineering. *The Thirteenth International Conference on Systems*. **2018**, 12-17.
- McHugh, K., Jing, L., Berhens, A., **Jayawardena, H. Surangi N.**, Tang., W. Langer, S. R., Jaklenc, A. Biocompatible Semiconductor Quantum Dots as Cancer Imaging Agents. *Adv. Mater.* **2018**, *30*, 1706356.
- Sundhoro, M.; Park, J.; Jayawardana, K. W.; Chen, X.; **Jayawardena, H. S. N.**; Yan, M. Poly(HEMA-co-HEMA-PPFA): Synthesis and preparation of stable micelles encapsulating imaging nanoparticles. *J. Colloid Interface Sci.* **2017**, *500*, 1-8.
- Chen, X.; Wu, B.; Jayawardana, K. W.; Hao, N.; **Jayawardena, H. S. N.**; Langer R.; Jaklenc, A.; Yan, M. Magnetic multivalent trehalose glycopolymer nanoparticles for the detection of mycobacteria. *Adv. Healthc. Mater.* **2016**, *5*, 2007-2012.
- Zhang, Y.; **Jayawardena, H. S. N.**; Yan, M.; Ramstrom, O. Enzyme classification using complex dynamic hemithioacetal systems. *Chem. Commun.* **2016**, *52*, 5053-5056.
- Sundhoro, M.; Wang, H.; Boiko, S. T.; Chen, X.; **Jayawardena, H. S. N.**; Park, J.; Yan, M. Fabrication of carbohydrate microarrays on a poly (2-hydroxyethyl methacrylate)-based photoactive substrate. *Organic & biomolecular chemistry* **2016**, *14*, 1124-1130.
- Park, J.; **Jayawadana, H. S. N.**; Chen, X.; Jayawadana, K.; Sundhoro, M.; Ada, E.; Yan, M. A General Method for the Fabrication of Graphene-Nanoparticle Hybrid Material. (2015) *Chem. Commun.* **2015**, *51*, 2882-2885
- Jayawardana, K. W.; **Jayawardena, H. S. N.**; Wijesundera, S. A.; De Zoysa, T.; Sundhoro, M.; Yan, M. Selective targeting of *Mycobacterium smegmatis* with trehalose-functionalized nanoparticles. *Chem. Commun.* **2015**, *51*, 12028-12031.
- Zhou, J.; Butchosa, N.; **Jayawardena, H. S. N.**; Park, J.; Zhou, Q.; Yan, M.; Ramström, O. Synthesis of Multifunctional Cellulose Nanocrystals for Lectin Recognition and Bacterial Imaging. *Biomacromolecules* **2015**, *16*, 1426-1432.
- Park, J.; **Jayawardena, H. S. N.**; Chen, X.; Jayawardana, K. W.; Sundhoro, M.; Ada, E.; Yan, M. A general method for the fabrication of graphene-nanoparticle hybrid material. *Chem. Commun.* **2015**, *51*, 2882-2885.
- Zhou, J.; Butchosa, N.; **Jayawardena, H. S. N.**; Zhou, Q.; Yan, M.; Ramström, O. Glycan-Functionalized Fluorescent Chitin Nanocrystals for Biorecognition Applications. *Bioconjugate Chem.* **2014**, *25*, 640-643.
- Chaudhary, S.; Kamra, T.; Uddin, K. M. A.; Snezhkova, O.; **Jayawardena, H. S. N.**; Yan, M.; Montelius, L.; Schnadt, J.; Ye, L. Controlled short-linkage assembly of functional nano-objects. *Appl. Surf. Sci.* **2014**, *300*, 22-28.
- Jayawardena, H. S. N.**; Wang, X.; Yan, M. Classification of Lectins by Pattern Recognition Using Glyconanoparticles. *Anal. Chem.* **2013**, *85*, 10277-10281.
- Jayawardena, H. S. N.**; Jayawardana, K. W.; Chen, X.; Yan, M. Maltoheptaose promotes nanoparticle internalization by *Escherichia coli*. *Chem. Commun.* **2013**, *49*, 3034-3036.
- Xu, C.; Uddin, K. M. A.; Shen, X.; **Jayawardena, H. S. N.**; Yan, M.; Ye, L. Photoconjugation of Molecularly Imprinted Polymer with Magnetic Nanoparticles. *ACS Appl. Mater. Interfaces* **2013**, *5*, 5208-5213.

Provisional and Awarded Patents

- Jayawardena, H. S. N.** Rathnayake, K.; Patel, U.; Deverasetty, V.M.; Sentell, A.; Johnson, J.; Mustain, M.; Rapid Diagnostic of Mycobacteria with Lectin Conjugated Magnetic Nanoparticles. US Provisional Application No. 62/764, 728.
- Langer, R.; Jaklenc, A.; McHugh, K.; Severt, S.; Lihong, J.; **Jayawardena, H.S.N.**; Bei, Y.J.; Zhong, G. C.; Microneedle tattoo patches and use thereof. US Provisional Application No. 16/036,712.
- Yan, M.; **Jayawardena, H. S. N.**; Jayawardana, K. W.; Chen, X. Glucose Enhances Cellular Uptake of Nanoparticles in Mammalian Cells. US Provisional Patent USSN 61781017, 2013.
- Yan, M.; **Jayawardena, H. S. N.**; Jayawardana, K. W.; Chen, X. Maltoheptaose Promotes Internalization of Nanoparticles in *Escherichia coli*. US Provisional Patent USSN 61766176, 2012
- Yan, M.; Wang, X.; **Jayawardena, H. S. N.** Method of making and using fluorescent-tagged nanoparticles and microarrays. US Patent WO2012071461A2, 2012.

Current research – infectious disease diagnostics and therapeutics

As Principal Investigator (UAH)

- Diagnostics - A rapid diagnostic field kit to detect *Mycobacterium tuberculosis* – causative pathogen of tuberculosis - the assay is based on the magnetic precipitation of the mycobacteria from a patient sputum sample. The assay requires no instrumentation and has takes less than 2 minutes to obtain a visual precipitate when mycobacteria is present.
- Therapeutics – Engineering drug delivery nano carriers targeting specific bacterial genera. The nanocarriers are designed to recognize and unload a cargo of antibiotics to the surface of bacteria. Combinational therapy - engineering nano carriers that offer laser triggered photothermal therapy and carry small molecule antibiotics