

DEPARTMENT OF CHEMISTRY



Professor Helen Jacobs, BSc, PhD, *UWI*
Head of Department

OVERVIEW

At the end of academic year 2013–14, 48 students graduated with B.Sc. degrees in Chemistry – two with first class honours and nine with upper second class honours. Two candidates were awarded research degrees, and 15 received M.Sc. degrees in Occupational and Environmental Safety and Health (OESH). Six of the eight full time candidates in the first cohort of the M.Sc. Food and Agro-Processing Technology (FAPT) programme graduated, representing 75% throughput in minimum time. Faculty members published a total of 22 journal articles, gave 17 conference presentations and continued to make significant and varied contributions to the profile and impact of the University through outreach and professional service. The 25th biennial Mona Symposium on Natural Products and Medicinal Chemistry was held in January; the symposium is always an academically stimulating and enjoyable event for staff and research students. Two major instruments, a high pressure

liquid chromatography-tandem mass spectrometer (HPLC-MS-MS) and a quaternary HPLC system, were acquired by the Pesticides Research Laboratory under the European Union Capacity Building Project.

HIGHLIGHTS OF MAJOR ACTIVITIES

Mona Symposium

The 25th Mona Symposium on Natural Products and Medicinal Chemistry was held in the department, 6th–9th January 2014. The scientific programme included eight plenary lectures delivered by distinguished chemists from Germany (1), Japan (2) and the USA (5). Of the eleven short papers, one was given by a member of the Mona staff, and six by graduate students from Mona. There were 27 visiting participants, inclusive of plenary speakers.

Staff Movements

Dr. Paul Maragh was promoted to Senior Lecturer, with effect from the beginning of the 2013–14 academic year. **Dr. Donna Minott-Kates** resumed teaching duties following a sabbatical year. **Dr. Andrea Goldson-Barnaby** was appointed to the post of Scientific Officer for the M.Sc. FAPT programme and served as maternity leave replacement for Dr. Camille Bowen-Forbes. **Ms. Ann-Marie Edwards** resigned from the post of Secretary III in the department to take up the position of Senior Secretary in the Department of Medicine.

Physical Plant

The first floor suite adjacent to the main office, vacated by the Electronics Unit, was assigned to the Department of Chemistry and refurbished to accommodate personnel for the M.Sc. FAPT and OESH programme secretariats. The new instruments acquired by the Pesticides Research Laboratory were installed in the ground floor space beside the NMR laboratory, which was previously occupied by the OESH secretariat. The department also took over three rooms on the ground floor of the block

connecting the departments of Chemistry and Physics, and these have been converted to a classroom, sensory evaluation laboratory and product development laboratory for the M.Sc. FAPT programme.

Students

Intake at all levels in the undergraduate programme was approximately the same as in the previous year.

Table 1: Numbers of students reading courses in chemistry, 2010–2014

Level	2010–2011 Sem 1/Sem 2	2011–2012 Sem 1/Sem 2	2012–2013 Sem 1/Sem 2	2013–2014 Sem 1/Sem 2
Preliminary	134/116	240/219	239/218	226/209
Introductory	537/458	537/458	546/506	544/488
Advanced	288/268	266/258	256/227	255/218
Postgraduates	50 32 F/T; 18 P/T	45 30 F/T; 15 P/T	42 29F/T; 13 P/T	65 49FT/ 16PT

* includes students registered in the MSc FAPT, but not OESH

Two M. Phil. degrees were awarded to the candidates shown below.

Table 2: Higher degrees in chemistry awarded in 2014

Degree completed	Name	Supervisor
MPhil	Jeanese Henderson Megil McNeil	Professor I. Kahwa Dr. R. Porter

BOOK LOAN SCHEME

The Department continues to operate its book loan scheme for undergraduate students. Demand for textbooks for the introductory courses is still highest, followed by those for the preliminary courses.

AWARDS AND PRIZES

For Research Day 2014, the following papers were selected as the three best publications from the FST in 2012–2013 and the authors received the Principal's Research Awards in this category

- “Antiproliferative activity and absolute configuration of zonaquinone acetate from the Jamaican alga *Styopodium zonale*”. **Winklet Gallimore**, Najair Pennicooke, Simone Badal, Rupika Delgoda, Kemil Walford and collaborators. *Phytochemistry*, 2013, 87, 96–101.
- “Isorecticular lanthanide metal-organic frameworks: syntheses, structures and photoluminescence of a family of 3D phenylcarboxylates”. Zeyar Min, **Marvadeen A. Singh-Wilmot** and collaborators. *European Journal of Inorganic Chemistry* 2012, 2012(28), 4419–4426.
- “The potential of *Cyathus africanus* for transformation of terpene substrates.” Paul Reese, Kayanne McCook-Russell, Avril Chen and collaborators. *Phytochemistry* 2012, 82, 61–66.

Professor Paul Reese was part of the team which received the award for the research project in the FST with the greatest business/economic development impact; the project was “Novel treatment of hyperglycemia and hypertension in rat models”.

At the Faculty Awards Ceremony held in March 2014, eight undergraduate students received awards ranging from \$15,000 to \$60,000, for their academic performance in Chemistry. They are **Alecia Robinson** (Cedric Hassall), **Kamar Thompson** (Garfield Sadler), **Christina Baker** (Wilfred Chan), **Tiffani Balckman** (Leonard J. Haynes), **Natasha Dyer** (Chemistry Department), **Clifton Thompson** (Pavelich/Honkan) and **Luciano Kelly** (Bertram Fraser-Reid), and the Willard Pinnock Prize was awarded to **Carlos Mingo**. Miss **Maxine Hoffman** and Dr. **Marvadeen Singh-**

Wilmot were recognized for outstanding teaching assessments at the same function.

Dr. Andrea Goldson-Barnaby was awarded the 2013 TWAS ROLAC Travel Grant Award to the ICSU Conference Cancun, Mexico as well as the 2014 Developing Country Sponsorship Award.

BETTER PROCESS CONTROL SCHOOL

The Better Process Control School (BPCS), a US-FDA approved certification course for food processors and regulators of the food industry, was held in the Department of Chemistry 13th–17th January 2014. Currently coordinated by **Dr. Donna Minott Kates**, the course has been continually run since 1995, initially at 2-year intervals. It is now offered annually to companies in Jamaica and across the region. The UWI was the first and is currently the only non-US institution approved by the FDA to offer the BPCS. This year, there were 28 participants (including one from National Canners, Trinidad) all of whom were certified as having satisfactorily completed the course of instruction in the processing of low acid and acidified foods.

VISIBLE EMISSIONS TRAINING

The Department of Chemistry hosted two Visible Emissions training courses (Smoke Schools) which were run by The National Environment and Planning Agency (NEPA), 21st January and 22rd July 2014; 35–40 persons attended the classroom modules of the training. This training is administered by Eastern Technical Associates (ETA) from the US; ETA is a United States Environmental Protection Agency (US-EPA) certified training institution. Two to four members of the Department of Chemistry participated in each course. The skill set developed in these courses is recognized internationally.

VISITORS TO THE DEPARTMENT

Dr. Basil Burke of Elgae Associates, Palo Alto, California, and former CEO of UWI Consulting, visited the department for the period 3rd -

Department of Chemistry

26th January 2014. Dr. Burke produced a review and evaluation of the Mona Symposium, with recommendations for its reorganization and development. He attended the 25th Mona Symposium and held discussions with symposium participants, organizers, and other stakeholders.

Professor Robert Hanson of St. Olaf College in Minnesota visited the Department for two weeks in January as part of his collaboration with Professor Robert Lancashire on Open Source software projects. Professor Hanson holds the Edolph A. Larson and Truman E. Anderson Sr. Chair in Chemistry and currently serves as chair of the Chemistry Department at St. Olaf. While here, he made presentations to students during the CHEM2111 (Inorganic Chemistry) Laboratory course on symmetry. He delivered a seminar, entitled “Molecular Visualization in the Age of International Connectivity”, which attracted over 100 students and staff.

Michelle Gordon, a biology student from the University of the Virgin Islands (UVI) visited the Department of Chemistry at Mona for the period 9th–18th December 2013. Her visit took place under the aegis of the collaboration between Dr. Wayne Archibald, Director, Caribbean Centre for Green Technology, UVI, and the Departments of Chemistry and Physics, FST, and was also a follow-up to the UWI Biodiesel Scoping Mission that visited UVI in October 2013. While here, she participated in laboratory and industrial manufacture and analysis of biodiesel, supervised by Dr. Michael Coley.

Professor Simisi Dube and **Professor Mathew Nindi**, both analytical chemists, of the Department of Chemistry, University of South Africa (UNISA) visited the Mona Campus and the Department of Chemistry on Thursday, 27th February. They met faculty members with research interests similar to theirs and discussed possible collaboration. UNISA drives a strong research agenda, and encourages and supports international collaboration. Professors Dube and Nindi were in Jamaica at the invitation of Bazba Theatrical Players to participate in discussions and workshops on community engagement for the benefit of learners in Science, Engineering and Technology.

STAFF-STUDENT EXCHANGE PROGRAMME

Two undergraduate students in Chemistry from Mona, **Carlos Mingo**s and **Rachael Taitt**, spent semester 2 at the University of Gothenburg under the aegis of the staff-student exchange funded by the Linnaeus-Palme Foundation. Visiting our department from Gothenburg were **Prof. Johan Boman** and undergraduate students, **Sofia Johansson** and **Sepideh Moghadam**. This exchange programme is coordinated by **Prof. Åke Nilsson** (Gothenburg) and **Dr. Novelette Sadler-McKnight** (UWI).

SEMINARS

Under the leadership of the Seminar Coordinator, **Dr. Marvadeen Singh-Wilmot**, members of the department enjoyed an active seminar programme. Fourteen seminars spanning a wide range of topics were delivered by visitors, faculty and postgraduates; seminars delivered by visitors to the department are listed below.

- **Professor Robert Hanson**, St. Olaf College, Northfield, Minnesota, USA, “Molecular Visualization in the Age of International Connectivity”, January 23, 2104.
- **Professor Simisi Dube and Professor Mathew Nindi**, University of South Africa (UNISA), “Technological Developments in Mass Spectrometry, Chromatography and Sample Preparation: A New Dimension to Food Safety and Challenges in Africa”, February 27, 2014.
- **Dr. Nickeisha Stephenson**, Post-Doctoral Associate, Harvard Medical School, Massachusetts General Hospital, “Catalytic Transamidation and From Organic Chemist to Radiochemist, my Foray into Fluorine-18 Chemistry”, April 24, 2014.

OUTREACH ACTIVITIES

Internal

Students and teachers from Osbourne Store Primary School were hosted in the Department on the 7th November 2013. The students enjoyed

engaging demonstrations of chemical phenomena which were conducted with the assistance of undergraduate chemistry students. The visit was coordinated by **Dr. Winklet Gallimore**.

A workshop entitled “Practical Aspects of Sensory Evaluation of Foods: Discrimination and Affective Testing – Principles, Hands-On Experience and Survival Skills” was held in the department, 14th–16th November 2013. It was organized by the staff involved in the MSc (FAPT) programme with the aim of raising the knowledge, skill and competence of food industry professionals in Jamaica. The presenter was Dr. Margaret Hinds, a graduate of the UWI (St Augustine campus). Dr. Hinds is a Certified Food Scientist and is currently Senior Sensory Project Manager at Givaudan Flavors (USA). Sensory Evaluation has been identified as an underserved area of expertise within the local industry. There were 19 participants; companies and organizations represented included Grace Kennedy, Nestle, Wisynco, Salada Foods the Scientific Research Council.

During the period 13th–17th January 2014, the department held another successful series of workshops on Spectroscopy and Chromatography for the Caribbean Advanced Proficiency Examinations (CAPE) in Chemistry. A total of 1,165 students and 59 teachers from 47 schools participated. These workshops were coordinated by **Dr. Novelette Sadler-McKnight**.

Dr. Ainka Brown coordinated a problem-solving competition for grade 11 high school pupils, which was held in the department on the 27th March 2014. Eight schools from across the island participated. The aim of the competition was to improve competence in application of the mole concept in an atmosphere of fun. Accompanying teachers attended a workshop on strategies for teaching the mole concept. The winners were Immaculate Conception High School (1st), Champion College (2nd) and Wolmer’s Girls’ School (3rd). Support was received from the Petroleum Corporation of Jamaica (PCJ), Environmental Solutions Ltd (ESL) and the Gleaner Company.

External

Dr. Winklet Gallimore coordinated the demonstrations from the department students at the Denbigh Agricultural Show, 4th–6th August 2013.

Dr. Minott Kates made a presentation at the Founders' Day Mini-Symposium, College of Agriculture, Science and Education (CASE), Passley Gardens, Portland, 24th January 2014: "Ackee: Myths versus Research Findings"

Drs. Brown, Facey, Gallimore, Goldson-Barnaby and Maragh participated in the Campion College inaugural Science Career Rap Session on the 12th February, 2014. Students (from first, third and sixth form) were shown posters describing research being carried out in the Department, and posters demonstrating how graduates in Chemistry have applied their training to solving topical problems, creation of new knowledge and manufacture of popular Jamaican products. Material with the course/degree offerings of the Department of Chemistry and potential careers was also on display. Dr. Gallimore conducted an interactive Chemistry demonstration.

Through the efforts of **Dr. Gallimore**, staff and students participated in the Relay For Life, a Jamaica Cancer Society fundraising event held 14th – 15th June 2014. An interactive display with scientific experiments, live organisms and posters enabled the staff and students from the Faculty to interact with the Relay for Life participants who visited the Faculty booth. The Faculty was awarded third prize for the display. Total funds collected: \$144,171.

PAPERS PRESENTED

- **F.W.O. Banton, R. B. R. Porter.** "Secondary metabolites from the aerial parts of *Bursera lunanii*." (Oral presentation). 25th Mona Symposium on Natural Products and Medicinal Chemistry, Kingston, Jamaica, 6th–9th January 2014.
- **A. Brown, S. Jarrett.** "The Use of a Thioxotriazinone en route to a

Conformationally Restricted Analogue of the Plant Metabolite (E)-Caracasamide”. (Oral presentation). 25th Mona Symposium on Natural Products and Medicinal Chemistry, Kingston, Jamaica, 6th – 9th January 2014.

- **S. Daley, Y. Jackson, N. Downer-Riley.** “Approaches Towards the Efficient Synthesis of Balsaminone A”. (Oral presentation). 25th Mona Symposium on Natural Products and Medicinal Chemistry, Kingston, Jamaica, 6th–9th January 2014.
- **S. Daley, Y. Jackson, N. Downer-Riley.** “Approaches Towards a New and Concise Route for the Synthesis of Balsaminone A”. (Poster). 15th Florida Heterocyclic & Synthetic Conference, University of Florida, Gainesville, Florida, USA. 2nd–5th March 2014.
- **N. Downer-Riley, O. Barrett, Y. Jackson.** “The Versatility of Thiocarbonyls as Precursors to 5-Membered Heterocycles”. (Invited lecture). Florida Heterocyclic & Synthetic Conference, University of Florida, Gainesville, Florida, USA. 2nd–5th March 2014.
- **W. Gallimore.** “Launching into the Deep: The Search for Natural Products from the Sea”. (Oral presentation). Cariscience Conference and Annual General Meeting, Runaway Bay, Jamaica, 14th–17th, November, 2013.
- **W. Gallimore.** “Diving In! The Search for Natural Products from the Sea”. (Oral presentation). Workshop on the Nagoya Protocol on Access and Benefit Sharing (ABS), Faculty of Science and Technology, UWI, Mona Campus, Jamaica, 28th November 2013.
- **W. Gallimore, S. Moulton.** “Approaches to the Chemical Modification of Stypoldine from the Jamaican Alga *Stypodium zonale*”. (Poster). 14th International Symposium on Marine Natural Products & 8th European Conference on Marine Natural Products, Galacia, Spain, 15th–20th September, 2013.
- **Y. Jackson,** “The UWI: Producing Ethically Grounded Students”. (Oral presentation – invited panel member). Ethics Conference – Towards a Corruption-Free Caribbean: Ethics, Values & Morality, UCCI, Grand Cayman, March 2014.

- **A. A. Johnson, H. Jacobs.** “Antimicrobial 4-hydroxy-2-octadec-(11Z)-enoylcyclohexane-1,3-dione and Other Secondary Metabolites from Various Jamaican *Peperomia* species”. (Poster) 247th ACS National Meeting & Exposition, Dallas, Texas, USA, 16th–20th March 2014.
- **R. J. Lancashire, R. M. Hanson.** “JCAMP-MOL: A JCAMP-DX Extension to Allow Interactive Model/Spectrum Exploration Using Jmol and JSpecView”. 246th ACS National Meeting & Exposition, Indianapolis, IN, USA, 8th–12th Sept, 2013.
- **R. J. Lancashire, A. N. Davies.** “30 Years of JCAMP-DX Formats and Still Going Strong”. 246th ACS National Meeting & Exposition, Indianapolis, IN, USA, 8th–12th Sept, 2013.
- **S-A. Parker, H. Jacobs.** “Polycyclicpolyisoprenylated Acyl Pholroglucinol Derivatives from Clusiaceae Species of Jamaica”. (Oral presentation). 25th Mona Symposium on Natural Products and Medicinal Chemistry, Kingston, Jamaica, 6th–9th January 2014.
- **A. Redway, R. C. Higgins, N. Downer-Riley, Y. Jackson.** “Novel Route to the Synthesis of Azacoumarins”. (Oral presentation). 25th Mona Symposium on Natural Products and Medicinal Chemistry, Kingston, Jamaica, 6th–9th January 2014.
- **A. O. Redway, N. K. Downer-Riley, Y. A. Jackson.** “Alternate Route to the Synthesis of Pyridocoumarins: Unusual Reactions of 4-Oxotetrahydroquinolines” (Poster). 15th Florida Heterocyclic & Synthetic Conference, University of Florida, Gainesville, Florida, USA. 2nd–5th March 2014.
- **A. Tate, P. B. Reese.** “Generation of Novel Analogues from the Tetracyclic Diterpene Stemodin”. (Oral presentation). 25th Mona Symposium on Natural Products and Medicinal Chemistry, Kingston, Jamaica, 6th–9th January 2014.
- **A. Tate, P. B. Reese.** “Generation of Novel Analogues from the Tetracyclic Diterpene Stemodin”. (Poster) 247th ACS National Meeting & Exposition, Dallas, Texas, USA, 16th–20th March 2014.

PUBLICATIONS

Books and Monographs

- R. A. Taylor, H. A. Ellis. *Zinc Carboxylate Liquid Crystals*. Germany: LAP Lambert Academic Publishing, 2013.

Refereed Journal Articles

- M. Bakir, C. Gyles. “Molecular Sensing Behaviour of the First Molybdenum Compound of di-2-Pyridyl Ketone-p-nitrophenylhydrazone” (dpknph), [Mo(CO)₄(dpknph)], *J. Spectroscopy and Dynamics* 4, 3 (2014): 18–23.
- M. Bakir, R. Conry, D. Thomas. “Synthesis, Solution Properties and Solid-State Structural Analysis of [Mn(4-N,N,S,N-dpktsc)Br]₂.nCH₃CN (n = 1 or 0 and dpktsc = di-2-pyridylketone thiosemicarbazone).” *J. Coordination Chemistry* 67 (2014): 249–264.
- C. Brown, N. McFarlane-Anderson, R. Alexander-Lindo, K. Bishop, T. Dasgupta, D. McGrowder. “The Effects of S-nitrosoglutathione and S-nitroso-N-acetyl-D, L-penicillamine in a Rat Model of Pre-eclampsia”. *Journal of Natural Science, Biology and Medicine* 4, 2 (2013): 330–335.
- N. Downer-Riley. “Highlight Syntheses”. *Annual Reports on the Progress of Chemistry*, Section B: *Organic Chemistry* 109 (2013): 43–46. DOI: 10.1039/C3OC90003G
- A. Padwa, Y. Zou, B. Cheng, H. Li, N. Downer-Riley, C. S. Straub. “Intramolecular Cycloaddition Reactions of Furo[3,4-b]indoles for Alkaloid Synthesis”. *J. Org. Chem.* 79, 7 (2014): 3173–3184. DOI: 10.1021/jo500331j.
- P. N. Nelson, H. A. Ellis, R. A. Taylor. “Effects of molecular and lattice structure on the thermal behaviours of some long chain length potassium(I) n-alkanoates”. *Journal of Molecular Structure* 1058 (2014): 234–243.

- P. N. Nelson, H., A. Ellis, R. A. Taylor. “Reply to comments on the inter-planar structures and lamellar packing of short and long chain zinc (II) n-alkanoates”. *Journal of Molecular Structure* 1070 (2014): 106–109.
- P. N. Nelson, H., A. Ellis. “Odd-even chain packing, molecular and thermal models for some long chain sodium(I) n-alkanoates”. *Journal of Molecular Structure* 1075 (2014): 299–310.
- M. Thompson, W. Gallimore. “Antileishmanial, Antimalarial and Antimicrobial Activity of the Jamaican ‘Touch-me-not’ sponge *Neofibularia nolitangere*”. *Journal of Applied and Pharmaceutical Sciences*, 3 (2013): 80–83.
- P. T. Maragh, K.-A. Green, K. Abdur-Rashid, A. J. Lough, T. P. Dasgupta. “Alternative Synthetic Methods for some PEPPSI-type Palladium Complexes”. *European Journal of Inorganic Chemistry* 22 (2014): 3600-3607. DOI: 10.1002/ejic.201402317
- P. T. Maragh, K.-A. Green, K. Abdur-Rashid, A. J. Lough, T. P. Dasgupta. “Imidazolium Salts Derived from Amino[2.2] Paracyclophane Compounds: Synthesis and Hydrolytic Ring-opening”. *Tetrahedron Letters* 55, 36 (2014): 5085–5087.
- G.-A. Bent, P. Maragh, T. Dasgupta, “*In vitro* Studies on the Reaction Rates of Acrylamide with the Key Body-fluid Thiols L-Cysteine, Glutathione, and Captopril”. *Toxicology Research*, (2014): DOI: 10.1039/C4TX00059E.
- M. Roberts, D. A. Minott, S. Pinnock, P. F. Tennant, J. C. Jackson. “Physicochemical and Biochemical Characterization of Transgenic Papaya Modified for Protection against *Papaya ringspot virus*”. *Journal of the Science of Food and Agriculture* 94, (2014): 1034–1038.
- O. C. Falloon, G. Baccus-Taylor, D. A. Minott. “A Comparative Study of the Composition of Tree-ripened versus Rack-ripened Ackees (*Blighia sapida*)”. *West Indian Journal of Engineering* 36, 2 (2014): 69–75.
- A. Goldson, D. Bremmer, K. Nelson, D. A. Minott-Kates. “Fat

Profile of Jamaican Ackees. Oleic Acid Content and Possible Health Implications”. *West Indian Medical Journal* 63, 1 (2014). <http://dx.doi.org/10.7727/wimj.2013.052>

- M. Abayomi, A. S. Adebayo, D. Bennett, **R. Porter**, J. Shelly-Campbell, G. Dawkins. “Phytochemical Testing and in vitro Antibacterial Activity of *Bixa orellana* (Annatto) Seed Extract”. *British Journal of Pharmaceutical Research* 4 (2014): 1387–1399.
- M. Abayomi, A. S. Adebayo, D. Bennett, **R. Porter**, J. Shelly-Campbell. “In vitro antioxidant activity of *Bixa orellana* (Annatto) Seed Extract”. *Journal of Applied Pharmaceutical Science* 4 (2014): 101–106.
- **R. Porter**, L. Williams, G.-A. Junor, C. Green. “Jamaican Spices as Food Preservatives”. *Annals of Tropical Research* 1 (2013): 13–22.
- A. Spence, R. Hanson, C. Grant, L. Hoo Fung, **R. Rattray**. “Assessment of the Bioavailability of Cadmium in Jamaican Soils”. *Environmental Monitoring and Assessment* 186, 7 (2014): 4591-4603. DOI:10.1007/s10661-014-3722-9.
- G. Lalor, V. **Rattray**, L. Hoo Fung. “Cadmium in Jamaican Bush Teas”. *West Indian Medical Journal*. (2014): 63. DOI: 10.7727/wimj.2012.322.
- W. M. Forbes, W. Gallimore, A. Mansingh, **P. B. Reese**, R. D. Robinson. “Eryngial (trans-2-dodecenal), A Bioactive Compound from *Eryngium foetidum*: Its Identification, Chemical Isolation, Characterization, and Comparison with Ivermectin *in vitro*”. *Parasitology* 141 (2014): 269–278.

PATENT APPLICATION

- D. Daley-Beckford, T. H. Yee, R. L. Alexander-Lindo, **P.B. Reese** (inventors). “Extracts from *Eucalyptus camaldulensis* for the treatment of hyperglycemia and hypertension”. UWI (assignee). U.S. Patent pending (application 14046759; filed October 4, 2013).

RESEARCH GRANTS & INCOME GENERATION

The Pesticides Research Laboratory/Professor Tara Dasgupta: €600,000 from the European Union through the Economic Partnership Agreement (EPA) Capacity Building Project for the acquisition of LC-MS-MS and Quaternary HPLC instruments and accessories, and for training in the use of the instruments.

Professor Paul Reese: US\$2,729.00 from the Mona Campus Committee for Research & Publications and Graduate Awards to support the project “Generation of new natural products from the fungus *Trichoderma harzianum*”.

Dr. Novelette Sadler-McKnight: SEK 252,920 (J\$4,296,630) from the Linnaeus-Palme Foundation to support staff/student exchange programme for academic year 2014–15 between the Department of Chemistry and Molecular Biology, University of Gothenburg, Sweden and the Mona Campus of UWI. This programme is being funded for the eighth consecutive year.

Consultation fees, summer school and rental of facilities: J\$8.3M

Better Process Control School: J\$2.1M

PROFESSIONAL AND PUBLIC SERVICE

Professor R. Lancashire

- Member, Jamaican Research and Education Network (JREN) stakeholders group
- Secretary and a Director of the Caribbean Academy of Sciences, Jamaica (CASJ)
- Secretary of the IUPAC Committee for printed and Electronic Publications (CPEP)
- IUPAC representative to ICSU committee on Data for Science and Technology (CODATA)

Department of Chemistry

Dr. P. Maragh

- Executive Member, National Council for Indian Culture in Jamaica
- Treasurer, Campion College Home School Association
- Assistant Chief Examiner for CXC (CSEC) Chemistry
- External Examiner for Chemistry – University of Technology
- External Examiner for Chemistry – Joint Board for Teacher Education
- External Examiner for Chemistry (Science & Technology) – MICO University
- External Examiner for Chemistry – College of Agriculture, Science & Education

Dr. D. Minott-Kates

- Member, National Food Standards Committee – Bureau of Standards Jamaica

Dr. R. Porter

- Committee member: The National Mirror Committee (NMC) for ISO TC 93 Starch (Including Derivatives and By-Products), The Bureau of Standards Jamaica (BSJ)

Dr. R. Rattray

- Technical Assessor for the Jamaica National Agency for Accreditation (JANAAC) in evaluation of the Chemistry Laboratory of the Bureau of Standards Jamaica (BSJ)
- Member, Board of Directors of the Lions Club of Mona (for 2014–2015)