

WTUN Exchanges in the Spotlight

Sonia Jenkins

WTUN Coordinator

WTUN Exchanges

- 2nd year of implementation
- 13 proposals → 20 proposals
- Topic based
 - Gender Equality
 - Good Health and Wellbeing
 - Clean Water and Sanitation
 - Sustainable Cities and Communities



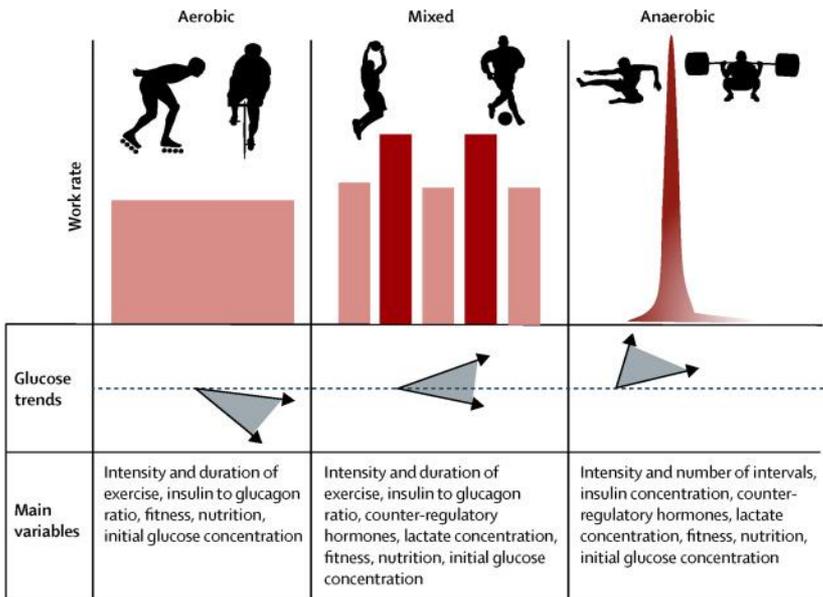
Towards the Development of an Artificial Pancreas

Dr Sarah Valkenborghs

Postdoctoral Research Associate

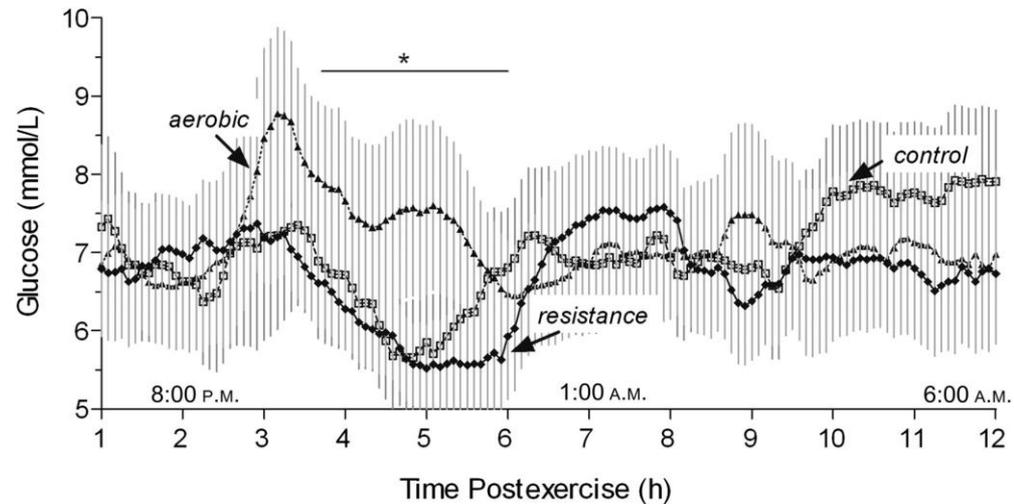
University of Newcastle, Australia

Exercise – Type 1 Diabetes



Riddell 2017

The Lancet – Diabetes and Endocrinology



Yardley 2013

Diabetes care

Additional Signals study



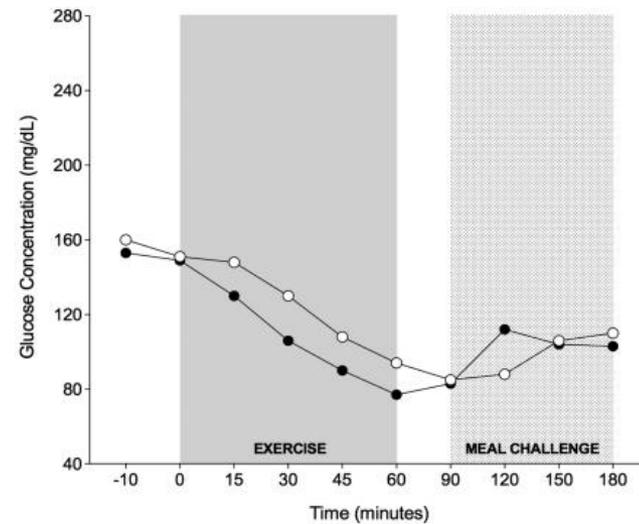
INSULIN DELIVERY
Medtronic offers a wide range of infusion sets so that you can choose the right infusion set for your comfort and safety.

CONTINUOUS GLUCOSE MONITORING
The Enlite™ sensor provides a reliable² CGM experience for you.³

BLOOD GLUCOSE TESTING
Contour™ Next LINK 2.4 meter links wirelessly to MiniMed 640G and provides proven⁴ testing accuracy and discreet remote bolusing.

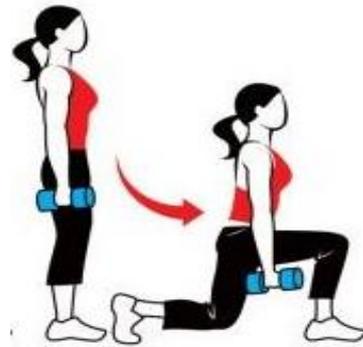
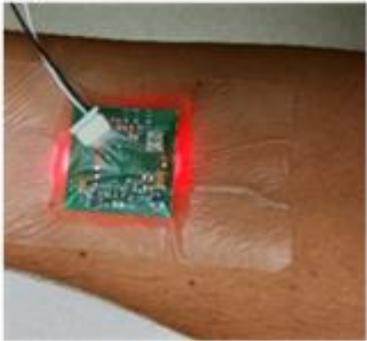
THERAPY MANAGEMENT TOOLS
CareLink™ Pro software includes insightful trend reports and therapy considerations to help you make informed treatment decisions for you.

actual size



Zaharieva 2019
Diabetes Technology & Therapeutics

Additional Signals study



Parameter	Change with Exercise in Type 1 Diabetes with Closed Loop Control								
	Moderate Intensity Exercise			High Intensity Intermittent Exercise			Resistance Exercise		
	Pre	During	Post	Pre	During	Post	Pre	During	Post
Glucose	-	↓↓	↓	-	↑	↓	-	↑/?	↓/?
Counter-regulatory Hormones	-	↑	↑	-	↑↑	↑	-	↑	
Lactate	-	↑	↑	-	↑↑↑	↑↑	-	↑/?	-/?
Ketones	-	-	↑	-	-	↑↑	-	?	?
Kinetic [‡] (gross movement)	-	↑↑	-	-	↑↑	-	-	-/↑	-
Kinetic (nocturnal microtremor)	-	-	-/↑	-	-	-/↑	-	-/↑	-/↑
Heart Rate	-	↑↑	↑	-	↑↑↑	↑↑	-	↑	-

WTUN Research Exchange at York University, Canada



WTUN – Thank you!





WTUN exchanges in the spotlight



KMUTT-UON: Benefits, Opportunities and Challenges

Parichart Naruphontjirakul, PhD.

Lecturer

Biological Engineering Program

King Mongkut's University of Technology Thonburi
(KMUTT)

WTUN Exchange

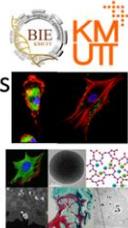
Date of exchange: 3rd – 10th August 2019

Exchange partners: University of Newcastle, Australia

Professor Ajayan Vinu: Global Innovation Chair for Nanomaterials and Director, School of Engineering



Bioactive glass for bone regeneration applications



Dr. Parichart Naruphontjirakul
Biological Engineering Program
Faculty of Engineering
King Mongkut's University of Technology Thonburi
parichart.nar@kmutt.ac.th



KMUTT-UON: Initiative opportunities

- MOU and agreement between KMUTT and UON: Dual degree and joint research
- Research collaboration: based on mesoporous silica nanoparticles (MSNs)
 - Discuss an individual project in Drug Delivery System
- Postgraduate and/or research exchanges



Research Collaboration

– Hydroxyapatite composite

- Zinc containing sol-gel derived bioactive glass nanoparticles (Zn-BGNPs)
- Zinc containing mesoporous silica particles (Zn-MSNs)
- **Objective** of this project is to develop synthetic bone graft substitute for bone and dental applications by producing the HA-Zn-BGNPs and HA-Zn-MSNs composites with either osteogenic or anti-bacterial effects

– BGNPs from MSN template

- **Objective** of this project are to synthesis new composition of BGs from MSNs templates by incorporating different types of alkaline and metal ions into the silica network and try to incorporate therapeutic drugs inside the pore structure of MSNs

Biological engineering program (BIE: KMUTT) – Advanced Technology Centre (ATC: UON)

Challenges

- **Matching research and collaboration**
 - **No English** version: difficulty in finding information
 - **Matching process**: facilitating links between sending and receiving institute
- **Setting a platform** to create broad collaborative research between member universities with more than only **TWO** member universities (sending and receiving) through WTUN facility



Acknowledgements



WORLD TECHNOLOGY
UNIVERSITIES NETWORK



Prof. Ajayan Vinu
Dr. Ajay Karakoti
Dr. Kannan Krishnan



Dr. Pornapit Darasawang
Operational broad member
Vice President for
Internationalization



Dr. Kanyawim kirtikara
Senior Vice President for
Research and Innovation



Dr. Warinthorn Songkasiri
Vice President for Research
Strategy



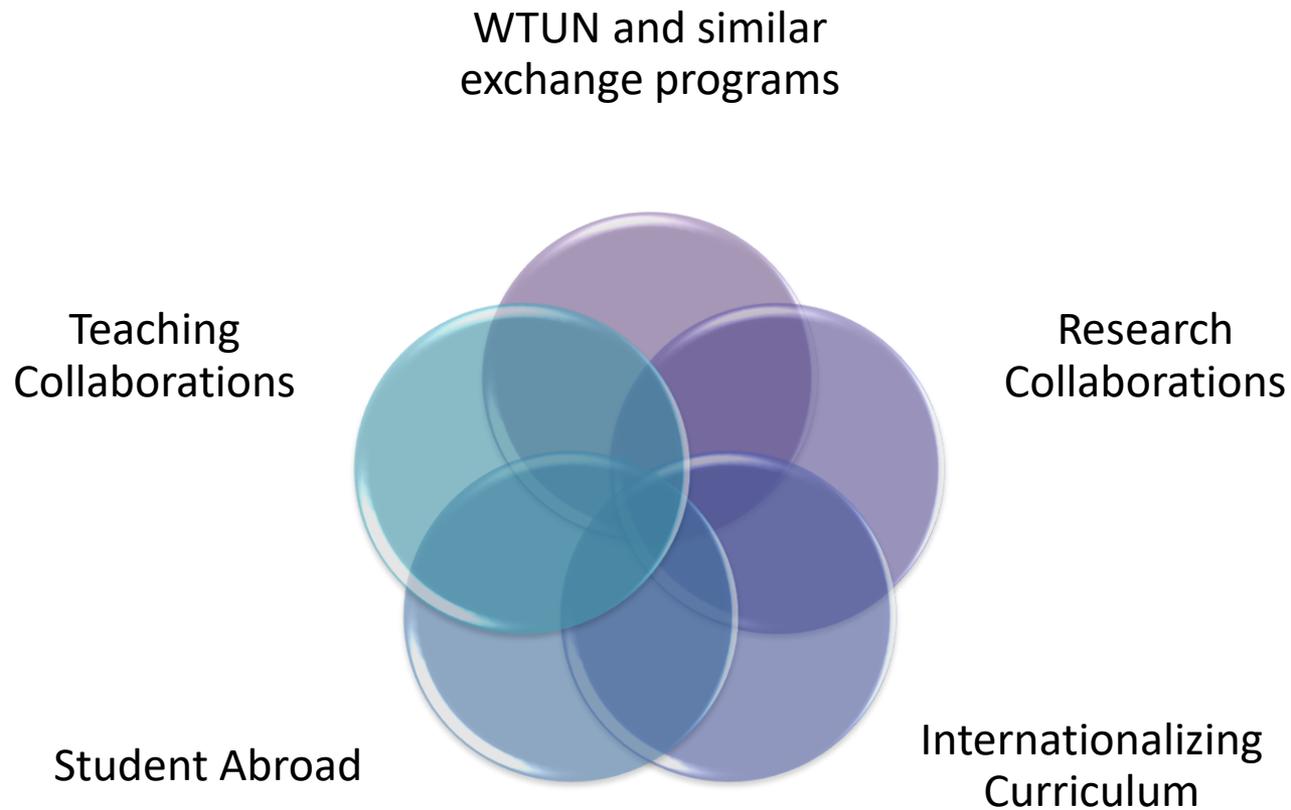
Dr. Suvit Saetia
President

Influence of WTUN on Faculty in Internationalizing Campus

Dr M M Ramya
Professor

Centre for Automation & Robotics
Hindustan Institute of Technology & Science
India

Faculty engagement in Internationalization



Impact at the Institution Level

Research

- International research teams and publications
- International dissemination and visibility of research results
- Economic aspects and funding

Teaching

- Internationalization of the curriculum
- Teaching pedagogy

Service

- Sensitive behavior towards international students
- Forms of engagement within and beyond the institution

Opportunity to engage in different form beyond institution

- Got an opportunity to participate in WTUC3
- Had an opportunity to interact with 7 international organizations on the expertise area

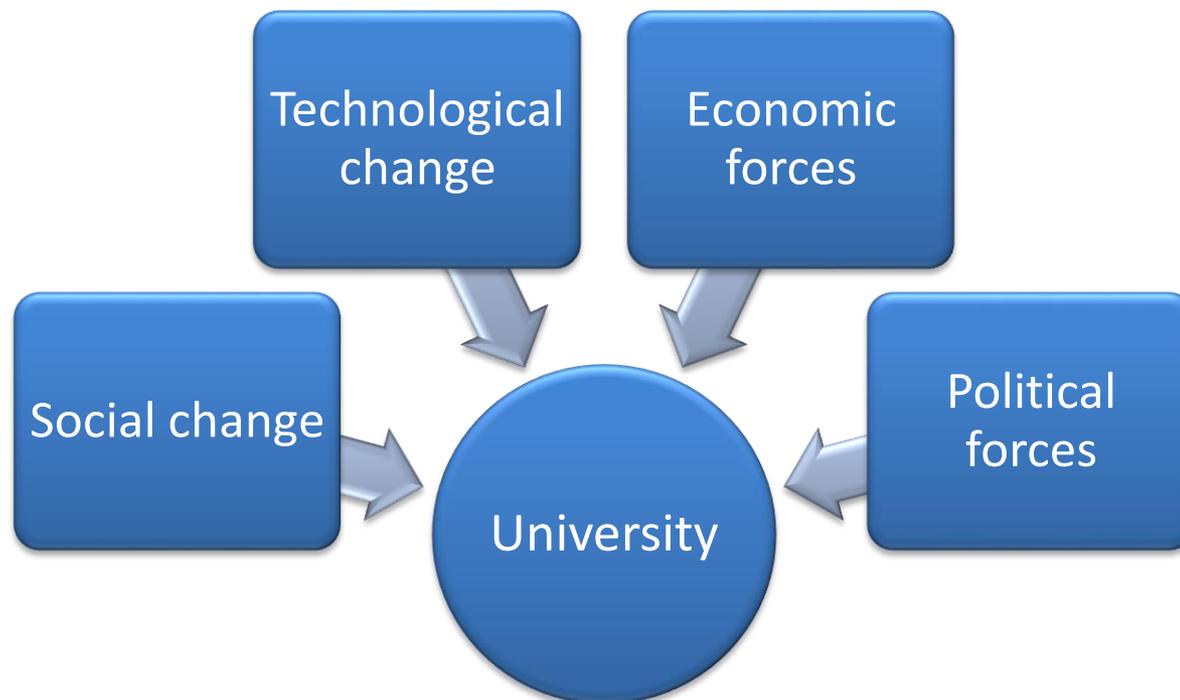


Dissemination and Visibility of Research Results

- Presented research studies carried out in the UN Sustainable Development Goals and WTUN in the title “Transforming Healthcare using Information Technology”



- During the last two decades universities worldwide have come under increasing pressures to adapt to rapidly changing factors



Efforts to Internationalize Curriculum

- Visit to Centre for Visual Computing and School of Computing, Informatics and Media, University of Bradford
- Visit to labs pressed for the introduction of international material into the curricula
- Introduced contents in the “Virtual Reality” course module
- Established Immersive Technologies Lab



Research Teams and Publications

- Presented the research studies that are carried out at Centre for automation & robotics, Hindustan Institute of Technology & Science at University of Bradford
- Identified a problem to work on a collaborative research project. The proposal in collaboration with Prof Hassan Ugail is to be submitted soon
- Applied and got selected for WTUN Exchange in collaboration with Prof Eko Supriyanto, University Technology Malaysia
 - Exchange planned in December 2019



Social and Cultural Awareness



Planned Activities

- Co-teach her colleague's classes
- Lecture on her expertise open to the community
- Meet with various academic departments to discuss potential future projects
- An online/ virtual activity will be organized by the professors to give students of both the Universities the opportunity to interact. This activity will be planned after the exchange.
- Participate in a outreach activity

Expected Outcomes

- Collaborative projects
- Shared teaching learning materials
- Student/ Faculty exchange
- Professional development for the collaborating faculty

Visit to King Mongkut's University of Technology Thonburi

Yueping Fang, Senior lecturer
Coventry University UK

Objectives of Exchange with KMUTT?

Research

- Deliver a seminar of current research on advanced glazing at KMUTT;
- Explore the collaboration of advanced glazing with energy harvesting;
- Investigate specific areas of energy efficient building façade for joint proposal to bid the grant for the joint scheme between UK and Thailand.

Teaching

- Together with the staff of KMUTT, we explore the way of teaching focusing on sustainability's educations;
- Exchange the teaching experience between the staff of the two universities;
- Explore the possibility to exchange teaching staff and students;
- Improve students experience;
- Widen the vision of students in the internationalisation context.

Feedback from KMUTT

From Dr Pattana Rakkwamsuk

- *We think that both topics of your seminar and class lecture would interest many people in the area of building energy efficiency including building energy scientists, architects, materials technologists, etc. Therefore, we decide to set those for public events in KMUTT. I am thinking of posting the talks on 'Facebook Live.'*

Contribute to UN's Sustainable Development Goal:

1. Sustainable Cities and Communities

- The proposed joint research will focus on energy efficiency, energy harvesting from renewable resources such as solar energy and waste heat. These will significantly reduce the energy consumption in buildings and fossil fuel used for energy generation, thus reduce green house gas (GHG) emission;
- Use of these technologies will help reduce the heating and cooling load in buildings, reduce the energy bills for building occupants, thus help build sustainable cities and communities.
- The contribution of these proposed joint research have clear impact on sustainability in the 3 areas: improving sustainable society (create more jobs in sustainable technologies), clean environment (less GHS emission) and Economic improvement (less energy bill).

Contribute to UN's Sustainable Development Goal:

2. Gender equality

Gender equality is based on:

- Improve the awareness of people on the issue of gender equality;
- Exchange the views of this issue with students and staff of KMUTT.
- Compare the difference in gender equality between the UK and Thailand, seeking the way to improve the situation based on difference in culture and customs of the two countries.

Activities to be carried out:

- Workshop on how to contribute to achieve UN sustainable development goals in the two countries.
- Workshop with both staff and postgraduate students on the development of energy efficiency, energy harvesting in buildings.
- Deliver a seminar for both staff and postgraduate students for our research findings and teaching experience. We will learn each other on these aspects.
- Outline subjects and topics where we can develop potential proposals and papers.

Expected outcomes and impact:

- We will achieve improved capacity of two universities on teaching, learning and research in terms of sustainability, which include promoting sustainable technologies and improving people's awareness on Social, Economic and Environment context.
- The sense of sustainable society include the gender equality.
- More specifically, we will develop technologies together on energy efficiency, energy harvesting from renewable resources and waste heat.
- Joint research papers on peer-review journals for REF 2021.
- Joint proposal to bid the grant for Thailand-UK collaboration scheme.
- Explore the topics for exchange students in the coming semesters.

The end



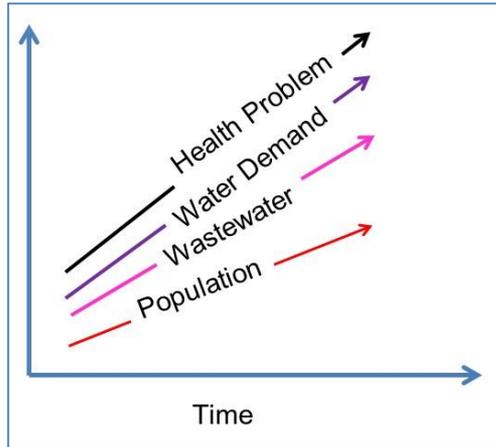
Virtual Centre for Water Research

International Centre for Water Research (ICWater)

Professor Iqbal M Mujtaba

Department of Chemical Engineering
Faculty of Engineering & Informatics
University of Bradford, UK

Water – The Grand Challenge



➔ **Solution ??**

Water Problem of the World cannot be addressed by Technical Solution alone

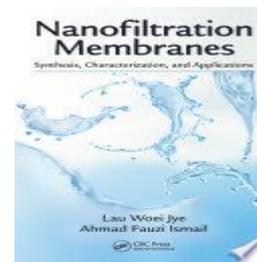
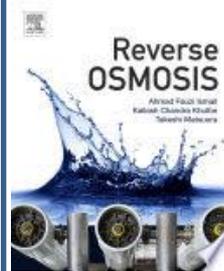
Water & Health

33% of the world population do not have decent toilet

11% of the world population do not have clean water close to home

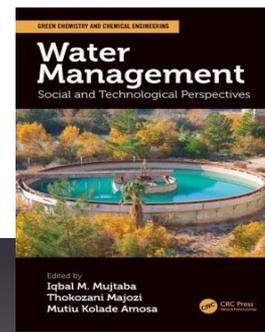
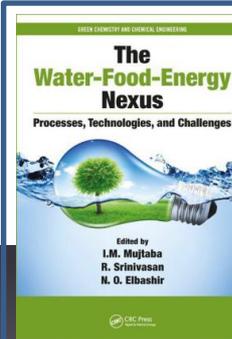
Globally, about 2 billion people use a drinking water source contaminated with faeces

WTU-N Exchange
University of Bradford –
University Technology Malaysia



Professor Ahmad Fauzi Ismail

World expert in Membrane Technology



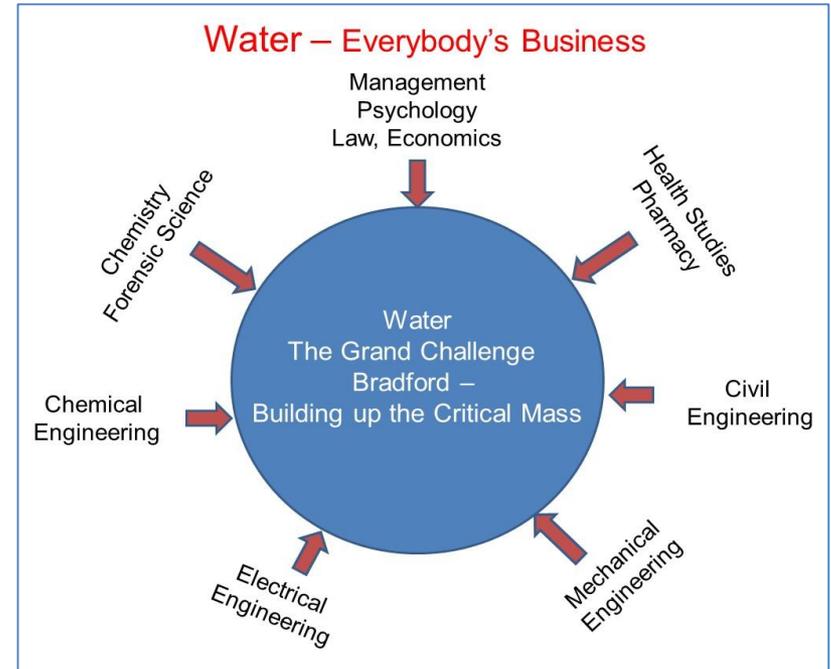
Professor Iqbal Mujtaba
Desalination &
Wastewater Treatment

Organised workshops in:
Qatar, India, South Africa

WTU-N Exchange

Water Workshop: 4th March 2019, University of Bradford

Participating Universities:
Bradford, Swansea, Queen Mary, Exeter



SMART CITY/GREEN-BLUE SUSTAINABLE CITY

Water Management:

Water Production, Wastewater Treatment and Re-use,
Water Distribution & Network, Flood Control, Precision
Agriculture, Water Demand Management

Houses

Industries

Education

Hospitals

Agriculture/Plants/Vegetation

Water-Energy-Food

Tools:

Drone/Robot/Measurements/Sensors/Big Data/Artificial
Intelligence/CFD/Modelling/Optimisation/Costing/Circular
Economy/Behavioural Science

Disciplines:

Engineering/Chemistry/Pharmacy/Management/
Bio Science/Social Science

Proposal to create:
**International Centre for Water
Research (ICWaterR)**

Aim: Leveraging a larger network
initially through the WTU-N and other
partners that will set us up for both
Future EU grants and GCRF/Newton

WTUN Exchanges – 2019/20

- This year the Operational Board are looking to make some changes to the exchanges framework
 - Bilateral exchanges
- Watch this space!
- Will launch before the end of 2019.