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**International Conference on Intelligent Sensors,  
 Sensor Networks and Information Processing, 2011**

Adelaide, Hilton Hotel, 6-10 December, 2011

*Environmental Monitoring and Smart Cities Symposium  
 Water Quality Monitoring Workshop*

The International Conference on Intelligent Sensors, Sensor Networks and Information Processing 2011 (ISSNIP 2011) will be held in Adelaide at the Hilton Hotel on 6-9 December, 2011. On Thursday 8 December and the morning of Friday 9 December, there is a symposium entitled 'Environmental Monitoring and Smart Cities' and to complement this, following the symposium on Friday 9 December, there will be a workshop on Water Quality Monitoring.

The accompanying workshop session will consider such issues as the robustness and accuracy of currently available sensors and the issues surrounding operator analysis of data and the provision of timely and easily interpretable data. The workshop is structured to address the current challenges:

- There is a growing need for the development of on-line sensors for our water, wastewater and reclaimed water areas of the industry.
- Changing environmental conditions mean that the quality of our source waters are showing increased variability and early detection of changes in quality and impacts on the treatment process are vital.
- In the wastewater area there is constant pressure to improve the efficacy of our processes, especially with regard to the removal of nutrients and other key contaminants. Improved on-line monitoring will permit better optimisation of the treatment train. Another factor that can adversely impact on the wastewater treatment process is shock loads of contaminants such as trade wastes entering the system unexpectedly. On-line monitoring has the potential to give a rapid indication of the changing quality of incoming wastewater and will allow improved management methods to be adopted at an early stage in the process.
- With regards to re-claimed water, such as stormwater, the raw product is known to be highly variable and many schemes are designed to allow the separation of first flush' water from the main body of the treatment system. However, such procedures are far from optimised and by the time laboratory analysis is carried out, and data confirmed, stormwater that is potentially of good quality and high value can be wasted.

The workshop will have three sections:

1. An overview including two introductory talks presented by Dr Nick Crosbie, Melbourne Water, and AWA Water Quality and Analysis Specialist Network
2. A look at current applications R&D projects, with several show-cases
3. A panel discussion, which will include:
  - a) A water industry point of view required. Water industry representatives
  - b) What is available, and what providers, including instrument manufacturers
  - c) Research directions which will provide future solutions.

**The Panel of Experts**

**Prof Chris Saint**  
 Director, SA Water Centre for Water Management and Reuse, University of South Australia  
 The SA Water Centre for Water Management and Reuse aims to maintain a balance between fundamental and applied research in a way that attracts key intellectual capability, promotes innovation and builds intellectual property. Strong links fostered by the Centre with local and international water industries ensure a vibrant water research capability focused on the main competencies of water reuse, recycling and sustainability. The centre is developing expertise in sensor development and deployment for the measurement of chemical and biological/microbiological parameters.

**Dr Michele Akeroyd**  
 Program Manager - Drinking Water, Water Quality Research Australia  
 WQRA is a not-for-profit, member-based organisation. It focuses on collaborative research of national application, with a focus on drinking water quality, recycled water and relevant areas of wastewater management. WQRA supports relevant R&D, particularly in the areas of innovative new technologies, water quality, wastewater treatment and recycling and public health aspects of water supplies. It works with its members, spanning industry, academia, government, regulators and the private sector, to identify priority research gaps and to facilitate the transfer and uptake of quality research. Michele has a wide range of experience in the water industry, with specific interest in drinking water, environmental management and integrated water resource management.

**Dr Nick Crosbie**  
 Acting Team Leader, Drinking Water Quality Planning, Melbourne Water, and Convenor, AWA Water Quality and Analysis Specialist Network  
 This network aims to strengthen technical and integrative expertise in water quality monitoring and analysis. It attracts a national membership from graduates through to seasoned professionals and represent diverse AWA interests. As 'corporate' knowledge develops, the network will be well placed to evaluate and promote current and emerging technologies, associated R&D efforts and standards development within the Australian water and wastewater sectors.

**Prof Richard Stuetz**  
 Co-Director, UNSW Water Research Centre, University of New South Wales, School of Civil and Environmental Engineering.  
 The UNSW Water Research Centre provides multidisciplinary research in water resources, engineering, management and the development of tools for environmental management and sustainability for improving the aquatic and atmospheric environments. The centre consists of two research nodes at the Kensington campus (established in 1987) and the Water Research Laboratory at Manly Vale (established in 1959). Richard has 16 years' experience in water and wastewater treatment and environmental biotechnology with specific research interests in water and wastewater systems, bioprocess monitoring and control, bioprocess dynamics and characterisation, fate of micropollutants in treatment systems and measurement and abatement of odorous compounds.

**Prof John Bridgeman**  
 Reader in Environmental Engineering in the School of Civil Engineering, University of Birmingham, UK  
 Prior to his appointment at Birmingham in 2005, John spent 15 years working in the water industry on planning, feasibility and detailed process and hydraulic design of water and wastewater treatment systems. John is a Chartered Civil Engineer and a Chartered Scientist. He is Vice-Chair of the International Water Association (IWA) Specialist Group on Strategic Asset Management and a Committee Member of the IWA Specialist Group on Disinfection.

**Water Quality Monitoring Workshop: 9/12/11**

11.15-11.20	Welcome by Chris Chow, Workshop Chair
11.20-11.50	<p><b>Overview</b></p> <ul style="list-style-type: none"> <li>• Nick Crosbie: Monitoring source, treatment processes and product waters (15 min)</li> <li>• Chris Saint, Sensors and on-line monitoring for microbial hazards – the issues (15 min)</li> </ul>
11.50-12.45	<p><b>Current applications of sensors for WQ Monitoring</b>  <i>Showcasing current industrial-based R&amp;D projects</i></p> <ul style="list-style-type: none"> <li>• Chris Chow, SA Water – S::CAN water quality monitoring (10 min)</li> <li>• Peter Hobson, SA Water – Weather stations and multiprobes (10 min)</li> <li>• Luke Zappia, Water Corporation – Water quality monitoring and treatment optimisation (10 min)</li> <li>• Doug Richards, SA Water – Trade waste monitoring (10 min)</li> <li>• Roger O'Halloran, CSIRO – Waste water monitoring (10 min)</li> <li>• Tung Nguyen, Sydney Water – Online monitoring in wastewater systems (10 min)</li> </ul>
12.45-1.30	Lunch
1.30-3.30	<p><b>Discussion</b>  <b>Panel - Michele Akeroyd, Nick Crosbie, Chris Saint, John Bridgeman, Richard Stuetz</b></p> <p><i>Water industry point of view</i>    Current industry practice, and what improvements the industry wants (total 30 min, industrial representatives 5-10 min talk)</p> <p>Industrial representatives:    Jeremy Lucas, Mgr WQ &amp; Integrated Management, SA Water:    Operational challenges for on-line instrumentation for drinking water    Rino Trolio, Manager, Wastewater Process Expertise Group, Water Corporation: Issues of using on-line Instrument for waste and recycled water applications</p> <p><i>What is available and what can be adapted to our needs?</i>    Commercially available instruments (instrument company section – ready solution): Instrument company representatives (5 min each) (DCM Process Control, Water Data Services, Hach, Osmoflo will send representatives)</p> <p><i>Research directions: the latest in research – future solutions</i>    Invited researchers can tell us what they can offer</p> <p>Tung Nguyen – Water Environment Research Foundation Initiative on Sensor Integration and Guidance    Jayvardhana Gubbi – Computer vision for environmental monitoring    Richard Stuetz – Water quality monitoring    David Davey – Custom-made analytical instruments for industry</p> <p><b>Wrap-up</b></p>
3.30	Afternoon tea

## Morning (11:15 to 12:45) - Talks

### 1. Overview

- Nick Crosbie (Mel Water and AWA Water Quality Monitoring and Analysis Specialist Network)
- Chris Saint (CWMR – UniSA)

### 2. Current Applications of Sensors for WQ Monitoring - show casing current industrial based R&D projects

- Chris Chow, SA Water, stormwater (10 min)
- Peter Hobson, SA Water, weather station and multiprobes (10 min)
- Luke Zappia – WA Water Corporation, process control optimisation (10 min)
- Rolando Fabris, SA Water, distribution system monitoring (10 min)
- Doug Richards, SA Water, trade waste (10 min)
- Tung Nguyen, Sydney Water, waste water (10 min)

Please save your questions for the afternoon discussion

Afternoon (1:30 to 3:00)

3. Discussion (**Panel** - Michele Akeroyd, Nick Crosbie, Chris Saint, John Bridgeman, Richard Stuetz)

a. Water industry point of view - current industry practice and what improvement the industry wants

- Jeremy Lucas, Manager WQ& Integrated Management, SA Water  
- Operational challenges for on-line instrumentation for drinking water (10min)
- Rino Trolio, Manager, Wastewater Process Expertise Group, WA Water Corporation -  
Issues of using on-line Instrument for waste and recycled water applications (10min)

**b.** What is available and what can be adapted to our needs?

- Hach - Brett Hellier (5 min)
- Osmoflo – Chris Wellard (5 min)
- Water Data Services – Andrew Howith (5 min)
- DCM Process Control – Rob Dexter (5 min)

c. Research Directions: the latest in research – future solutions

- Tung Nguyen, Sydney Water – Water Environment Research Foundation Initiative on Sensor Integration and Guidance (10 min)
- Jayavardhana Gubbi, Mel. Uni. – computer vision for environmental monitoring (10 min)
- Richard Stuetz, UNSW – water quality monitoring (10 min)
- David Davey, UniSA – custom made analytical instruments for industry (10 min)