Athanasios (Thanos) Bourtsalas

ab6211@imperial.ac.uk| ab3129@caa.columbia.edu

Education

Sep 2015- Sep 2017 Columbia University, NY, USA: Postdoctoral Fellow, Earth Engineering Centre
'Development of Sustainable Waste Management Guidebook for LAC region': The aim of this postdoctoral
research is to develop a Guidebook for sustainable waste management in the LAC region, which remains a major challenge for municipalities. The research received funding for a period of two years from Columbia Global Centres (CGC). The main objective of the project is the formulation of better strategies for waste management for LAC countries. Specific issues, such as information dissemination, development of human resource, source separation or recyclables, and use of the informal recycling sector will be examined and discussed to achieve sustainable solutions. Based on the findings of the successful first round of seminars and workshops conducted in collaboration with CGC and the experience of the EEC in LAC, a sustainable vision map would be formulated as an outcome of this Project. This vision map would include technology selection criteria (based on availability of different technologies), "green jobs, social and technical entrepreneurships, capacity development, knowledge sharing, planning, policy and regulations formulation and implementation. A main objective will be to create university-industry national organizations such as have been shown to be useful in the U.S. and other countries.

Oct 2011- Apr 2015 Imperial College London, London, UK: PhD in Civil & Environmental Engineering 'Beneficial reuse applications of waste-to-energy residues': The aim of this doctoral research was to develop processing technology to produce ceramics from the challenging fine fraction of incinerator bottom ash (IBA) from wet and dry discharge technology, following the extraction of metals. The experimental approach involved complete characterisation of raw and processed materials, covering a wide range of materials science and chemical engineering techniques. These included Acid Neutralisation Capacity and leaching potential characterisation (incl. international environmental standards and the use of LeachXS), X-Ray Fluorescence, X-Ray Diffraction, and Lithium metaborate digestion analysis. The produced ceramics were characterised in terms of the physical, mechanical and chemical properties, and the microstructure was characterised by the use of Scanning Electron Microscopy (SEM) and optical microscopy. The results indicated that the challenging fine IBA fraction can be transformed into an inert material suitable for the production of ceramics. The patent of the process is pending.

Sep 2008- May 2010 Columbia University, New York, USA: MS in Earth& Environmental Engineering

Oct 2000- Oct 2006 University of Patras, Greece: B.Eng, M.Eng in Electrical& Computer Engineering

International Experience

Sep 2015- to date Earth and Environmental Engineering Department, Columbia University, New York: Adjunct Professor/ Lecturer

April 2015- to date Manager Global WTERT Council, Earth Engineering Centre, Columbia University, New York

Sep 2013- to date **Ministry of Environment, Singapore: Member of the Technical Advisory Panel**
'Development of Singapore's Environmental Guideline for the Utilization of Municipal Solid Waste Incinerator Bottom Ash for Land Reclamation': The first phase of the project involved the collection of information to depict the current status of leaching standards and environmental guidelines world-wide. The second phase involves the adaptation of the most appropriate leaching standards and the development of environmental guidelines regarding the potential of using IBA for land reclamation in Singapore's offshore land. Part of the research involves the use of LeachXS software for the characterisation of raw and processed materials.

June 2013- to date **Be Waste Wise, New York, USA: Principal Researcher**
Creating and organizing online video panels regarding waste management challenging issues.

Dec 2011- to date **Waste to Energy Research and Technology Council-UK: Coordinator**
Coordinating activities of the WTERT-UK. Recent actions included the organisation of a seminar in collaboration with the WTERT-India held in the National Environmental Engineering Research Institute (NEERI) on Waste Management and Resource Efficiency in Nagpur, India. In addition, during a series of seminars organised by the WTERT- UK and the Centre of Sustainable Development of Imperial College London with main objective waste management in developing nations in January 2015, the team under my supervision was awarded the first price (12 participating).

May 2010- to date **Earth Engineering Centre, Columbia University, New York, USA: Research Associate**
Analysing regional data and identifying systems that 'decouple' sustainable waste management from growth and other sustainability economic factors.

Aug 2008- May 2010 **Centre for Life Cycle Analysis, Columbia University, New York, USA: Research Assistant**
Evaluating manufacture techniques of modern PV technologies by examining life cycle issues.

Publications

Journal publications:

A. Bourtsalas, L. Vandeperre, S. Grimes, N. Themelis, R. Koralewska, C. Cheeseman (2015), 'Beneficial reuse of the fine fraction of incinerator bottom ash from a dry discharge system in the manufacture of pyroxene ceramics', In Press *Waste Management & Research*

A. Bourtsalas, C. Cheeseman, N.J.Themelis (2015), 'Waste Management of Nations: A Global, Socio-Economic Analysis', In Press *Waste Management*.

A. Bourtsalas, L. Vandeperre, S. Grimes, N. Themelis, C. Cheeseman (2015), 'Production of pyroxene ceramics from the fine fraction of incinerator bottom ash', In Press, *Waste Management*, April 2015.

A. Bourtsalas, N. Themelis (2013), 'Waste management in UK', *Waste Management World*, Volume 4(4), p.27-35.

International conferences:

A. Bourtsalas, L. Vandeperre, S. Grimes, N. Themelis, R. Koralewska, C. Cheeseman (2015), 'Production of pyroxene ceramics from the fine fraction of incinerator bottom ash', ISWA World Congress, September 2015, Antwerp, Belgium

A. Bourtsalas, L. Vandeperre, S. Grimes, N. Themelis, R. Koralewska, C. Cheeseman (2015), 'Beneficial reuse of the fine fraction of incinerator bottom ash from a dry discharge system in the manufacture of pyroxene ceramics', WASCON conference, June 2015, Santander, Spain

A. Bourtsalas, N.J.Themelis (2012), 'Analysis of Data on Generation and Disposition of MSW in the United Kingdom and the Role of Waste to Energy', 2nd BIT conference, Xi'an, China

A. Bourtsalas, N.J.Themelis, E. Kalogirou (2012), 'Waste Management in Greece and China and Potential for Waste to Energy', ISWA World conference, Daegu, S. Korea

V. Fthenakis, H. Kim, S. Gualtero, A. Bourtsalas (2009), 'Nanomaterials in PV Manufacture: Some Life Cycle Environmental and Health Considerations', IEEE PV Specialist Conference, Philadelphia, USA.

Policy reports:

Assessment Report on Climate Change and Cities, Earth Institute, Columbia University, New York, USA (May 2015): Acting as a co-author to the waste management and climate change chapter.

Book chapters:

E. Kalogirou, A. Bourtsalas, M. Klados, N.J.Themelis (2012), 'Waste management in Greece and potential for Waste-to-Energy', Waste-to-Energy: Opportunities and Challenges for Developing and Transition Economies, Springer, p.219-235.

Pending publications:

A. Bourtsalas, V. Fthenakis, N.J.Themelis, C. Cheeseman (2015), 'Material Resources from Waste: Optimising the treatment of Waste-to-Energy residues', *Environmental Science &Technology*, June 2015.

Awards and Scholarships

2011- 2014 Dixon Scholarship, Imperial College London, UK

2008- 2010 Full graduate scholarship: Brookhaven National Laboratory, DoE, USA

2015 PhD early submission award, Imperial College London, UK

Skills and Abilities

Software Environmental (Simapro, LeachXS), Programming (MATLAB, C++), Design Software (AutoCAD, SOLIDWORKS), Database and Statistics (SPSS, Excel, MySQL)

Languages Greek (native), English (fluent), German (fluent)

Academic and Professional Memberships

-Member of the International Solid Waste Association (ISWA: 11-1589)

-Member of the ISWA Working Group on Energy Recovery (ISWA WGER)

-Member of the American Society for Mechanical Engineers (ASME: 100779364)

-Member of the New York Academy of Sciences (NYAS)

-Member of the Technical Chamber of Greece (116007)