

Prof. Dr. Robert Harold Buchanan Exell

EDUCATION

- Year 1962 Master of Arts., Oxford University, U.K.
Year 1962 Doctor of Philosophy, Oxford University, U.K.
Year 1993 Honorary Doctor of Science (Applied Mathematics), King Mongkut's Institute of
Thonburi, Thailand

FIELDS OF EXPERTISE

Physics, applied mathematics, solar energy.

RESEARCH INTERESTS

Solar and wind energy

PUBLICATIONS

International Conference

- Taengchum, T., Chirarattananon, S., Exell, R.H.B. and Chaiwiwatworakul, P. (2014) Tracing of daylight through circular light pipes with anidolic concentrators. *Solar Energy*. 110: pp. 818-829. December 2014
- Taengchum, T., Chirarattananon, S., Exell, R.H.B., Kubaha, K. and Chaiwiwatworakul, P. (2013) A study on a ventilation stack integrated with a light pipe. *Applied Thermal Engineering*. 50(1): pp. 546–554. January 2013
- Yavinchan, S., Exell, R.H.B. and Sukawat, D. (2011) Convective parameterization in a model for the prediction of heavy rain in Southern Thailand. *Journal of the Meteorological Society of Japan*. 89(A): pp. 201-224. May 2011
- Sou, S., Siemers, W. and Exell, R.H.B. (2010) The Design of a Photovoltaic/biomass hybrid electrical energy system for a rural village in Cambodia. *International Journal of Ambient Energy*. 31(1): pp. 3-12. January 2010
- Pramuang, S. and Exell, R.H.B. (2007) The regeneration of silica gel desiccant by air from a solar heater with a compound parabolic concentrator. *Renewable Energy*. 32(1): pp. 173-182. January 2007
- Golaka, A. and Exell, R.H.B. (2007) An investigation into the use of a wind shield to reduce the convective heat flux to a nocturnal radiative cooling surface. *Renewable Energy*. 32(4): pp. 593-608. April 2007
- Pramuang, S. and Exell, R.H.B. (2005) Transient test of a solar air heater with a compound parabolic concentrator. *Renewable Energy*. 30(5): pp. 715-728. April 2005

International Conference

- Aman, N., Manomaiphiboon, K., Assareh, N., Limpaseni, W. and Exell, R.H.B. (2016) Visibility in the Dry Season over a Southern Coastal Area of Eastern Thailand. In: *6th International Conference on Sustainable Energy and Environment (SEE2016) in conjunction with 6th International Conference on Green and Sustainable Innovation (ICGSI2016) and 1st International Conference on Climate Technology and Innovation (CTI2016): Energy & Climate Change - Innovating for a Sustainable Future*, Bangkok, Thailand.

- Pongtaveesap, T., Chirarattananon, S., Exell, R.H.B. and Chaiwiwatworakul, P. (2012) Air Flow in a Hot Water Induced Stack Subject to Wind Disturbance. In *2012 International Conference on Power and Energy Engineering (ICPEE 2012)*. 1-2 September 2012. Phuket, Thailand.
- Noisri, C. and Exell, R.H.B. (2012) Developing a Simple Numerical Model in Moist Air for Studying Cloud Formation Processes in the Tropics. In *30th Conference on Hurricanes and Tropical Meteorology*. 15-20 April 2012. Ponte Vedra Beach, Florida, USA.
- Chusai, C., Manomaiphiboon, K., Saiyasitpanich, P., Leungsakul, S., Thepanondh, S. and Exell, R.H.B. (2012) Costs of NOx Emission Reduction in Map Ta Phut Industrial Area, Rayong Province, Thailand. In *4th International Conference on Sustainable Energy & Environment (SEE 2011): A Paradigm Shift to Low Carbon Society*. 27-29 February 2012. Bangkok, Thailand.
- Chusai, C., Manomaiphiboon, K., Saiyasitpanich, S., Leungsakul, S., Exell, R.H.B. and Thepanondh, S. (2011) Performance Assessment of AERMOD Dispersion Modeling System to Map Ta Phut Industrial Area, Rayong Province, Thailand. In *1st EnvironmentAsia International Conference*. 22-25 March, 2011. Rama Garden Hotel, Bangkok, Thailand.
- Exell, R.H.B. and Spaziante, P.M. (2009) Innovative Technologies for Vanadium Flow Batteries. In *World Renewable Energy Congress 2009 - Asia (WREC 2009-Asia)*. 19-22 May 2009. Bangkok, Thailand.
- Sou, S., Exell, R.H.B. and Siemers, W. (2007) Potential renewable energy resources and constraints for rural electrification towards sustainable development in Cambodia. In *The 5th Eco-Energy and Materials Science and Engineering Symposium (5th EMSES)*. 21-24 Nov 2007. Pattaya, Thailand.
- Sangwaldach, P., Wongwises, P., Exell, R.H.B. and Sukawat, D. (2007) The Preliminary Study of Southwest Monsoon Onset over Thailand. In *Asia Oceania Geosciences Society 4th Annual Meeting (AOGS 2007)*. 31 July - 4 August, 2007. Bangkok, Thailand.
- Yavinchan, S., Exell, R.H.B. and Sukawat, D. (2006) Precipitation Forecasts by the New Kain-Fritsch Convective Parameterization Scheme during the Extreme Precipitation Event in Southern Thailand. In *The 2nd Joint International Conference on Sustainable Energy and Environment (SEE 2006)*. 21-23 November 2006. Bangkok, Thailand.
- Sangwaldach, P., Wongwises, P., Exell, R.H.B. and Sukawat, D. (2006) The Surface Features of Southwest Monsoon Onset over Thailand. In *The 2nd Joint International Conference on Sustainable Energy and Environment (SEE 2006)*. 21-23 November 2006. Bangkok, Thailand.
- Exell, R.H.B. (2006) A Numerical Model for Demonstrating Small-scale Meteorological Processes in the Tropics. In *The 2nd Joint International Conference on Sustainable Energy and Environment (SEE 2006)*. 21-23 November 2006. Bangkok, Thailand.
- Yavinchan, S., Exell, R.H.B. and Sukawat, D. (2004) Convective Parameterization Schemes for Numerical Modeling of the Atmosphere in Thailand. In *The Third Regional Conference on Energy Technology towards a Clean Environment "Sustainable Energy and Environment (SEE)"*. December 1-3, 2004. Hilton Hua Hin Resort & Spa, Hua Hin, Thailand.
- Sudhibrabha, S., Exell, R.H.B. and Sukawat, D. (2004) Ozone and UV Index Forecastion. In *The Third Regional Conference on Energy Technology towards a Clean Environment "Sustainable Energy and Environment (SEE)"*. December 1-3, 2004. Hilton Hua Hin Resort & Spa, Hua Hin, Thailand.

- Sudhibrabha, S., Exell, R.H.B. and Sukawat, D. (2004) Preliminary Forecast of Ozone and UV over Thailand. In *Proceedings Quadrennial Ozone Symposium*. June 1-8, 2004 Kos, Greece.
- S. Ruangjun and R.H.B. Exell. (2004) Forecasting Fog at Donmuang Airport in Winter. In *The Third Regional Conference on Energy Technology towards a Clean Environment "Sustainable Energy and Environment (SEE)"*. December 1-3, 2004. Hilton Hua Hin Resort & Spa, Hua Hin, Thailand.
- Golaka and R. H. B. Exell. (2004) The Downward Atmospheric Longwave Radiation at Night in Northern Thailand. In *The Third Regional Conference on Energy Technology towards a Clean Environment "Sustainable Energy and Environment (SEE)"*. December 1-3, 2004. Hilton Hua Hin Resort & Spa, Hua Hin, Thailand.
- R. H. B. Exell and P.M. Spaziante. (2004) A Fuel Cell Powered by Sugar. In *The Third Regional Conference on Energy Technology towards a Clean Environment "Sustainable Energy and Environment (SEE)"*. December 1-3, 2004. Hilton Hua Hin Resort & Spa, Hua Hin, Thailand.
- R. H. B. Exell and P. M. Spaziante. (2004) Potential Contributions of Regenerative Fuel Cells to Photovoltaic Systems. In *Regional Seminar on Photovoltaics (PV SEC-14). January 28-30, 2004*. Chulalongkorn University, Bangkok, Thailand.
- S. Pramuang and R. H. B. Exell. (2003) A Solar air heater with a compound parabolic concentrator. In *The Second Regional Conference on Energy Technology towards a Clean Environment*. February 12-14, 2003. Thailand.
- W. Phisitsangkankool and R. H. B. Exell. (2003) A Novel inductionless DC to AC inverter based on a vanadium redox flow battery system. In *The Second Regional Conference on Energy Technology towards a Clean Environment*. February 12-14, 2003. Thailand.
- Golaka and R. H. B. Exell. (2003) Night radiative cooling and underground water storage in a hot humid climate : a preliminary investigation. In *The Second Regional Conference on Energy Technology towards a Clean Environment*. February 12-14, 2003. Phuket, Thailand.
- Exell, R.H.B. and Surakiatchai, K. (2003) The Calculation of shunt currents in stacks of bipolar electrochemical cells. In *The Second Regional Conference on Energy Technology towards a Clean Environment*. February 12-14, 2003. Phuket, Thailand.
- Exell, R.H.B., Spaziante, P.M. and Kanchanadul, P. (2003) New technologies related to vanadium fuel cells. In *The Second Regional Conference on Energy Technology towards a Clean Environment*. February 12-14, 2003. Phuket, Thailand.
- Exell, R.H.B. and Unthamesra, S. (2000) Dynamic Simulation of a Solar-Regenerated Solid Desiccant Air Conditioning System. In *The First Regional Conference on Energy Technology Towards a Clean Environment*. December 1-2, 2000. Chiang Mai. Thailand.
- Exell, R.H.B., Spaziante, P.M. and Kanchanadul, P. (2000) New Vanadium Batteries - A Breakthrough Solution for Electricity Storage. In *The First Regional Conference on Energy Technology Towards a Clean Environment*. December 1-2, 2000. Chiang Mai. Thailand.

National Journal

- Taengchum, T., Chirarattananon, S. and Exell, R.H.B. (2012) A study on a combined light pipe and solar-heated ventilation stack. *KKU Research Journal*. 17(2): pp. 217-226. March-April 2012

- Wongsaming, P. and Exell, R.H.B. (2011) Criteria for forecasting cold surges associated with strong high pressure areas over Thailand during the Winter Monsoon. *Journal of Sustainable Energy & Environment*. 2(4): pp. 145-156. Oct. - Dec. 2011
- Yavinchan, S., Exell, R.H.B. and Sukawat, D. (2010) Exploratory case studies evaluating convective parameterization schemes for model predictions of heavy rainfall in Thailand. *Journal of Sustainable Energy & Environment*. 1(1): pp. 21-30. March 2010
- Sangwaldach, P., Wongwises, P., Exell, R.H.B. and Sukawat, D. (2008) Proposed new criteria for southwest monsoon onset date in Thailand. *KMUTT Research and Development Journal*. 31(3): pp. 428-449. Jul-Sep 2008
- Ruangjun, S. and Exell, R.H.B. (2008) Regression models for forecasting fog and poor visibility at Donmuang airport in winter. *Asian Journal of Energy and Environment*. 9(3&4): pp. 215-230. June - Dec 2008
- Sudhibrabha, S., Exell, R.H.B. and Sukawat, D. (2006) Ultraviolet forecasting in Thailand. *Science Asia* 32(2): pp. 107-114. October 2006
- Exell, R.H.B. and Sornkaew, P. (2000) A computer model of a small domestic PV system in the Thai climate. *Asian Journal of Energy and Environment*. 1(2): pp. 99-107. June
- Exell, R.H.B. (2000) The concepts of entropy and temperature and a new theory of macroscopic thermodynamics. *Thammasart International Journal of Science and Technology*. 5(3): pp. 40-48.

National Conference

- Exell, R.H.B. (2003) Foundations of macroscopic thermodynamics as a mathematical theory. In *The Eighth National Conference in Mathematics*. 22-23 May, 2003. Tongtara Hotel, Bangkok, Thailand.