Nicola Bowler - Vita

Contact information

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Education and Training

University of Surrey, UK	Physics	Ph.D.	1994
University of Nottingham, UK	Physics	B.S.	1990

Postdoctoral training

Iowa State University	Nondestructive evaluation	1999 to 2001
University of Surrey, UK	Composite materials modeling	1997 to 1998
University of Surrey, UK	Applied electromagnetic theory	1995 to 1996
University of Reading, UK	Meteorology	1994

Research and Professional Experience

Professor	Iowa State University	2012 to present
Associate Professor	Iowa State University	2006 to 2012
Associate Scientist	Iowa State University	2001 to 2006
Adjunct Associate Professor	Iowa State University	2001 to 2006
Senior Scientist	Defence Evaluation Research Agency, UK	1999

Nicola received her PhD for theoretical work in the field of eddy-current nondestructive evaluation (NDE). Her research interests include engineering the electromagnetic properties of composite materials by analysis and design, and electromagnetic NDE of dielectrics, composites and metals – inventing new NDE techniques and improving accuracy in capacitive, four-point potential drop, eddy-current, microwave and terahertz NDE. Nicola was awarded the Akinc Excellence in Teaching Award in 2011, awarded by the MSE Department, in recognition of outstanding teaching performance, and the Akinc Excellence in Research Award in 2012 in recognition of outstanding achievement in research. Since 2006 Nicola's research expenditures from competitively funded grants total approximately $2.5M.

Publications (113 total publications)

1. **N. Bowler**, M. R. Kessler, L. Li, P. R. Hondred and T. Chen, Electromagnetic Nondestructive Evaluation of Wire Insulation and Models of Insulation Material Properties, Report Number: NASA/CR-2012-217330, NF1676L-14135, at: http://www.sti.nasa.gov/
2. R. T. Sheldon and **N. Bowler**, An Interdigital Capacitive Sensor for Quantitative Characterization of Wire Insulation, In: Thompson, D. O. and Chimenti, D. E., *Review of Progress in Quantitative Nondestructive Evaluation*, accepted December 2012.
3. P. R. Hondred, S. Yoon, **N. Bowler** and M. R. Kessler, Degradation Kinetics of Polytetrafluoroethylene (PTFE) and poly(ethylene-alt-tetrafluoroethylene) (ETFE), *High Performance Polymers*, accepted December 2012.
4. T. Chen and **N. Bowler**, A Capacitive Probe for Quantitative Nondestructive Evaluation of Wiring Insulation, *NDT&E International*, 52, 9-15, 2012, at: http://www.sciencedirect.com/science/article/pii/S0963869512001119

5. T. Chen and **N. Bowler**, Analysis of a Capacitive Sensor for the Evaluation of Circular Cylinders with a Conductive Core, *Meas. Sci. Technol.*, 23, 045102 (10pp), 2012, at: http://iopscience.iop.org/0957-0233/23/4/045102/article
6. T. Chen, **N. Bowler** and J. R. Bowler, Analysis of Arc-electrode Capacitive Sensors for Characterization of Dielectric Cylindrical Rods, *IEEE Trans. Instrumentation Meas.*, 61, 233-240, 2012, at: http://ieeexplore.ieee.org/xpls/abs_all.jsp?arnumber=5910382&tag=1
7. L. Li, **N. Bowler**, P. R. Hondred and M. R. Kessler, Statistical Analysis of Electrical Breakdown Behavior of Polyimide Following Degrading Processes, *IEEE Trans. Dielectr. Electr. Insul.*, 18, 1955-1962, 2011, at: http://ieeexplore.ieee.org/xpls/abs_all.jsp?arnumber=6118633
8. P. R. Hondred, S. Yoon, **N. Bowler**, E. Moukhina and M. R. Kessler, Degradation Kinetics of Polyimide Film, *High Performance Polymers*, 23, 335-342, 2011, at: http://hip.sagepub.com/content/23/4/335.abstract?rss=1
9. L. Li, **N. Bowler**, P. R. Hondred, and M.R. Kessler, Influence of Thermal Degradation and Saline Exposure on Dielectric Permittivity of Polyimide, *J. Phys. Chem. Solids*. 72, 875-881, 2011, at: http://www.sciencedirect.com/science/article/pii/S002236971100093X
10. L. Li, **N. Bowler**, M. R. Kessler and S.-H. Yoon, Dielectric Response of PTFE and ETFE Wiring Insulation to Thermal Exposure, *IEEE Trans. Dielectr. Electr. Insul.*, 17, 1234-1241, 2010, at: http://ieeexplore.ieee.org/xpls/abs_all.jsp?arnumber=5539695

Patents

1. **N. Bowler** "Characterization of Conductor by Alternating-Current Potential-Drop Method with a Four-Point Probe", U.S. Patent No. **7,443,177**, issued October 28, 2008.
2. D. B. Johnson, **N. Bowler** and Y. Li "Patch Antenna Resonator Sensor for Non-Destructive Evaluation", patent application filed September 28, 2009.
3. **N. Bowler** and T. Chen "A Concentric Coplanar Capacitive Sensor for Nondestructive Evaluation", patent application filed July 18, 2011.

Synergistic Activities

1. Associate Editor for *Measurement Science and Technology* and Technical Editor for *Journal of Nondestructive Evaluation* 2011-2013. Senior Associate Editor for *IEEE Transactions on Dielectrics and Electrical Insulation* 2010-2012.
2. Local Arrangements Chair 2014 and Secretary 2010 – 2012 of the *Conference on Electrical Insulation and Dielectric Phenomena*.
3. Conference Proceedings Co-Editor, 14th & 10th *International Workshop on Electromagnetic Nondestructive Evaluation* (ENDE) 2009 & 2004.
4. Reviewer for the following archival journals, among others: Applied Physics Letters, IEEE Transactions on Dielectrics and Electrical Insulation, IEEE Transactions on Instrumentation and Measurement, International Journal of Applied Electromagnetics and Mechanics, Journal of Applied Physics, Journal of Electromagnetic Waves and Applications, Journal of Physics: Condensed Matter, Journal of Physics D: Applied Physics, Journal of Nondestructive Evaluation, Measurement Science and Technology, Nondestructive Testing & Evaluation International, Research in Nondestructive Evaluation, Scripta Materialia, Sensors and Actuators B.
5. Developed an online Graduate Certificate in Nondestructive Evaluation, available to professional engineers and campus-based students; I am now Director of Certificate Studies.

Thesis Advisor and Postgraduate-Scholar Sponsor

Postdoctoral scholars: **3**; Graduate students advised: **16**; Undergraduate students mentored: **18**.