

Dale K. Hensley
Controlled Synthesis Engineer
Nanofabrication Research Laboratory
Center for Nanophase Materials Sciences
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Education:

Fountainhead College of Technology, Knoxville, TN A. Electronic Technology 1983

Professional Experience:

2005 – Present Controlled Synthesis Engineer, Nanofabrication Research Laboratory group, Center for Nanophase Material Sciences Division, ORNL
2001 – 2005 Controlled Synthesis Research Associate, Molecular-Scale Engineering and Nanoscale Technologies group, Condensed Matter Sciences Division, ORNL.
1991 – 2001 Principal Technologist, Surface Modification and Characterization Research Center (SMAC), Solid State Division, ORNL
1983 – 1991 Engineering Technologist, Oak Ridge Electron Linear Accelerator (ORELA), ORNL

Professional Memberships

1991 – 2000 Symposium of North Eastern Accelerator Personnel (SNEAP)
2001 – Present AVS Science and Technology of Materials, Interfaces, and Processing

Honors and Awards

2011 Significant Event Award for important contributions in the installations and start-up of AARA- procured advanced microscopes for Electron Microscopy with Soft-Material Emphasis in the CNMS and provided training to users of these microscopes
2009 AVS International Symposium and Exhibition, Art Zone 1st place winner, for “Space Invader”
2008 Technical Support Team Award, for successful operation of the Nanofabrication Research Laboratory and the growth of a vibrant user community
1998 Technical Achievement Award, for developing a novel time-shared, foreline and roughing vacuum system for the Surface Modification and Characterization Research Center that resulted in a greatly reduced environmental impact while achieving an annual cost savings of approximately \$31,000
1993 Pollution Prevention Award, Large Quantity Generator, Chlorinated Water Minimization

Publications (Over 85 publications)

Selected publication list follows CV.

Research Synopsis

1. *Controlled Synthesis of Vertically Aligned Carbon Nanofibers (VACNF)*
Use a custom built dc plasma-enhanced chemical vapor deposition (DCPECVD) to grow VACNF for several interdisciplinary research teams in the following projects: Neuronal interfaces, Cell mimic, Membrane mimic, DEAL, Intracell, Maximus, TFT arrays, F-extraction, Nanostructured Gene Delivery Arrays and ORNL-64. Also participate in CNMS User projects by growing VACNF's.

Publications

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Selected Publications:

1. "Role of ion flux on alignment of carbon nanofibers synthesized by DC plasma on transparent insulating substrates," Ryan C. Pearce, Alexei V. Vasenkov, Dale K. Hensley, Michael L. Simpson, Timothy E. McKnight, Anatoli V. Melechko *ACS Appl. Mater. Interfaces*, Article ASAP DOI: 10.1021/am200722c Publication Date (Web): July 25, 2011
2. "Monodispersed biocompatible silver sulfide nanoparticles: Facile extracellular biosynthesis using the gamma-proteobacterium, *Shewanella oneidensis*," Anil K. Suresh,* Mitchel J. Doktycz, Wei Wang, Ji-Won Moon, Baohua Gu, Harry M. Meyer III, Dale K. Hensley, David P. Allison, Tommy J Phelps and Dale A. Pelletier, *Acta Biomaterialia*, accepted July 2011
3. "Enhanced Performance Consistency in Nanoparticle/TIPS Pentacene-Based Organic Thin Film Transistors," Zhengran He, Kai Xiao, William Durant, Dale K. Hensley, John E. Anthony, Kunlun Hong, S. Michael Kilbey II, Jihua Chen, and Dawen Li, *Advanced Functional Materials*, online date: July 2011
4. "Challenges in Process Integration of Catalytic DC Plasma Synthesis of Vertically Aligned Carbon Nanofibres," Melechko, A. V. Pearce, R. C. Hensley, D. K., Simpson, M. L., McKnight, T. E., *J. Phys. D.* 44 (17), 174008 (2011).
5. "Electrical and Thermal Conductivity of Low Temperature CVD Graphene," The Effect of Disorder, Vlasiouk, I., Smirnov, S., Ivanov, I., Fulvio, P. F., Dai, S., Meyer, H., Chi, M. F., Hensley, D., Datskos, P., Lavrik, N. V., *Nanotechnology* 22 (27), 275716 (2011)
6. "Reactive solid-state dewetting of Cu-Ni films on silicon," Clearfield R., Railsback J., Pearce R., Hensley D., Fowlkes J., Fuentes-Cabrera M., Simpson M., Rack P., Melechko A. *Applied Physics Letters* Vol. 97, Issue 25, Date: 20 Decembder 2010 DOI:10.1063/1.3527078
7. "Transparent microarrays of vertically aligned carbon nanofibers as a multimodal tissue interface," Hensley D., Melechko A., Ericson N., Simpson M., McKnight T. (2010).. In: *Biomedical Sciences and Engineering Conference (BSEC)* Print ISBN: 978-1-4244-6713-6, Digital Object Identifier: 10.1109/BSEC.2010.5510801, Date: 15, July 2010
8. "Covalent functionalization and electron-transfer properties of vertically aligned carbon nanofibers: The importance of edge-plane sites," Landis E., Klein K., Liao A., Pop E., Hensley D., Melechko A., Hamers R. In: *Chemistry of Materials*, vol. 22, Issue number 7, pages 2357-2366 DOI: 10.1021/cm9036132 Published: APR 13 2010
9. "Positional Control of Catalyst Nanoparticles for the Synthesis of High Density Carbon Nanofiber Arrays," S. T. Retterer, A. Melechko, D. K. Hensley, M. L. Simpson, and M. J. Doktycz, *Carbon* 46(11), 1378 (2008).

10. "Pulsed Laser Dewetting of Nickel Catalyst for Carbon Nanofiber Growth," Y. F. Guan, R. C. Pearce, A. V. Melechko, D. K. Hensley, M. L. Simpson, and P. D. Rack, *Nanotechnology* 19(23), 235604 (2008).
11. "Control of Carbon Nanostructure: From Nanofiber Toward Nanotube and Back," A. V., Melechko, K. L. Klein, J. D. Fowlkes, D. K. Hensley, I. A. Merkulov, T. E. McKnight, P. D. Rack, J. A. Horton and M. L. Simpson. *J. Appl. Phys.* 102(7), 074314–7 (2007).
12. "Control of Catalyst Particle Crystallographic Orientation in Vertically Aligned Carbon Nanofiber Synthesis," J. D. Fowlkes, A. V. Melechko, K. L. Klein, P. D. Rack, D. A. Smith, D. K. Hensley, M. J. Doktycz, and M. L. Simpson, *Carbon* 44(8), 1503–1510 (2006).
13. "Molecular Transport in a Crowded Volume Created from Vertically Aligned Carbon Nanofibers: A Fluorescence Recovery After Photobleaching Study," J. D. Fowlkes, E. D. Hullander, B. L. Fletcher, S. T. Retterer, A. V. Melechko, D. K. Hensley, M. L. Simpson, and M. J. Doktycz, *Nanotechnology* 17(22), (2006).