

**Thomas M. Crawford, Ph.D., Professor**

University of South Carolina, Department of Physics and Astronomy,  
712 Main St., Columbia, SC 29208 crawftm@mailbox.sc.edu

**(a) Professional Preparation**

<u>Undergraduate:</u> Haverford College Haverford, PA	Physics Major	B.S.	1992
<u>Graduate:</u> University of Colorado at Boulder Boulder, CO	Physics Major	M.S.	1995
<u>Graduate:</u> University of Colorado at Boulder Boulder, CO	Physics Major	Ph.D.	1997
<u>Postdoctoral:</u> National Research Council, NIST Boulder, CO	Physics		1997-1999

---

**(b) Appointments**

2016-present, Professor, Department of Physics and Astronomy, University of South Carolina  
2005-2015, Associate Professor, Department of Physics and Astronomy, University of South Carolina, Columbia, SC  
1999-2005, Research Staff Member, Seagate Research, Pittsburgh, PA

---

**(c) Products** – 5 closely related/5 significant products (out of 57 total publications, 14 patents)

- 1.) Bryan L. Chavez , Kevin C. Sosnowski , Matthew J. Bauer , Maeve A. K. Budi , Jennifer S. Andrew , and Thomas M. Crawford. Toward nanoscale multiferroic devices: Magnetic field-directed self-assembly and chaining in Janus nanofibers. *AIP Advances* **8** 056808 (2018).
  - 2.) L. Ye, T. Pearson, Y. Cordeau, O. T. Mefford, and T. M. Crawford. Triggered self-assembly of magnetic nanoparticles. (*Nature*) *Scientific Reports* **6** 23145 (2016).
  - 3.) Longfei Ye, Tanner Pearson, Cory Dolbashian, Philip Pstrak, A. R. Mohtasebzadeh, Ben. Fellows, O. Thompson Mefford, and Thomas M. Crawford. Magnetic-field-directed self-assembly of programmable mesoscale shapes. *Advanced Functional Materials* **26** (22) 3983 (2016).
  - 4.) L. Ye, B. Terry, O.T. Mefford, C. Rinaldi, and T. M. Crawford, All-nanoparticle concave diffraction grating fabricated by self-assembly onto magnetically-recorded templates, *Optics Express*, **21** (1) 1066 (2013).
  - 5.) J. Henderson, S. Shi, S. Cakmaktepe, and T. M. Crawford, Pattern transfer nanomanufacturing using magnetic recording for programmed nanoparticle assembly, *Nanotechnology* **23**, 185304 (2012).
- 1.) S. Garzon, L. Ye, R. A. Webb, T. M. Crawford, M. Covington, and S. Kaka, Coherent control of nanomagnet dynamics via ultrafast spin torque pulses, *Phys. Rev. B* **78** 180401 (R) (2008).

- 2.) M. Covington, T. M. Crawford, and G. J. Parker, Time-resolved measurement of propagating spin waves in ferromagnetic thin films, *Phys. Rev. Lett.* **89** 237202 (2002).
- 3.) T. M. Crawford, M. Covington, and G. J. Parker, Time-domain excitation of quantized magnetostatic spin-wave modes in patterned NiFe thin film ensembles, *Phys. Rev. B* **67** 024411 (2003).
- 4.) T. M. Crawford, P. Kabos and T. J. Silva, Coherent control of precessional dynamics in thin film permalloy, *Appl. Phys. Lett.*, **76** (15): p. 2113. (2000).
- 5.) T. J. Silva, C. Lee, T. M. Crawford and C. T. Rogers, Inductive measurement of ultrafast magnetization dynamics in thin Permalloy films. *J. Appl. Phys.*, **85**(11): p. 7849. (1999).

---

**(d) Synergistic Activities**

1. Served as deputy-director of the South Carolina Smart State Center for Experimental Nanoscale Physics. (2013-2019)
  2. Helped launched start-up MagAssemble LLC, which commercialized Crawford's Pattern Transfer Nanomanufacturing (PTNM)<sup>TM</sup> technology.
  3. Capstone laboratory course development. Conceived and implemented 3 new laboratories for 500-level Capstone physics courses for undergraduate physics majors: The Optics laboratory has a < 20 fs Ti:sapphire ultrafast oscillator and a UHV atom trap; The Condensed Matter laboratory has a cleanroom with photolithography, an evaporator, a cryostat for temperature dependent measurements and an optical microscope for plasmonic studies. The Electronics Laboratory has NI-ELVIS breadboards and a Field-Programmable-Gate-Array module.
  4. Strong supporter of undergraduate research. Crawford has worked with 25 students over the past 11 years, including 8 women. 9 of these students have been co-authors on 8 publications within the last 5 years.
  5. Trained in Project Management and Design for Six Sigma (DFSS).
-