

## Stefan Seelecke, Dr.-Ing. habil.

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### *a. Professional Preparation*

1999 Dr.-Ing. habil., habilitation, Thermodynamics Technical University Berlin  
1995 Dr.-Ing. (PhD), *magna cum laude*, Phys. Eng. Sci. Technical University Berlin  
1989 Dipl.-Ing. (MS), *summa cum laude*, Phys. Eng. Sci. Technical University Berlin

### *b. Appointments*

2001- Associate Professor, NC State University, Dept. Mech. & Aerospace Eng.  
1999-2000 Associate Professor, TU Berlin, Institute of Thermodynamics  
1996-99 Postdoctoral fellow, TU Berlin, Institute of Thermodynamics. (*Group leader Shape Memory Alloys. Supervised four scientists, two students, two technicians and two mechanics.*)  
1995 Research fellow, Weierstraß Institute of Applied Analysis and Stochastics, Berlin  
1994 Visiting scholar, Massachusetts Institute of Technology (MIT), Mech. Engineering  
1989-94 Research Associate, Thermodynamics, TU Berlin

### *c. Publications*

#### *i)*

- Seelecke, S.; Müller, I. "Shape Memory Alloy Actuators: Modeling and Simulation", *ASME Applied Mechanics Reviews*, vol 56, no 6, 2003, to appear
- Smith, R. C., Seelecke, S., Ounaies, Z., Smith, J. "A Free Energy Model for Hysteresis in Ferroelectric Materials", *Journal of Intelligent Material Systems and Structures*, 2003, to appear
- Smith, R. C., Dapino, M. J., Seelecke, S. "A Free Energy Model for Hysteresis in Magnetostrictive Transducers", *Journal of Applied Physics*, 93, 2003, 458-466
- Vortmann, C., Schnerr, G.H., Seelecke, S. "Thermodynamic Modeling and Simulation of Cavitating Nozzle Flow", *Int. J. of Heat and Fluid Flow*, Vol. 24, Issue 5 (2003), pp. 774-783
- Seelecke, S. "Modeling the Dynamic Behavior of Shape Memory Alloys", *International Journal of Non-Linear Mechanics*, Special Issue on Hysteresis and its Implications in Mechanics, 37, 2002, 1363-1374
- Seelecke, S., Büskens, C., Müller, I., Sprekels, J. "Real-Time Optimal Control of Shape Memory Alloy Actuators in Smart Structures", Groetschel, M., Krumke, S.O., Rambau, J. (eds.), "*Online Optimization of Large Systems: State of the Art*", Springer Verlag, 2001
- Seelecke, S.; Müller, I. "Thermodynamic Aspects of Shape Memory Alloys" in *Topics in the mathematical modelling of smart materials*, Morro, A. (ed.), *Mathematical and Computer Modelling*, 34, 2001, 1307-1355

- Seelecke, S.; Papenfuß N. “A Finite Element Formulation for SMA Actuators”, *Journal of Applied Mechanics and Engineering*, Vol. **5**, No.1, 2000
- Seelecke, S. “Equilibrium Thermodynamics of Pseudoelasticity and Quasiplasticity”, *Cont. Mech. Therm.* **8**, 309-322, 1996
- Seelecke, S. “Torsional Vibration of a Shape Memory Wire”, *Cont. Mech. Therm.* **9**, 165-173, 1997
- Müller, I., Huo, Y., Seelecke, S. “Quasiplasticity and Pseudoelasticity”, in *CIME Lecture Notes*, Springer Verlag, Heidelberg, 87-146, 1994

#### ***d. Memberships in Professional Organizations***

- American Association of Mechanical Engineers (ASME), since 2001
- Society for Industrial and Applied Mathematics (SIAM), since 2001
- Int. Society for the Interaction of Mathematics and Mechanics (ISIMM), since 2001
- Sigma Xi, since 2003
- German Engineers Association (VDI), since 1996

#### ***e. Honors***

- NSF CAREER Award, 2002

#### ***f. Synergistic Activities***

- Member of Program Committee: SPIE Conference on Smart Structures & Materials
- Co-organizer of several symposia (e.g., SIAM conference on Control and its Applications, US National Congress of Theoretical & Applied Mechanics)
- Associate Editor: *Continuum Mechanics and Thermodynamics*, Springer Verlag
- Reviewer for several Technical Journals
- Reviewer for several NSF panels (Nanomanufacturing program)
- 3 patents on Shape Memory Alloy Applications, 1 invention disclosure

#### ***g. Graduate Students***

##### ***Current:***

- Olaf Heintze (Ph.D.)
- Juntao Fei (Ph.D.)
- Alexander York (M.Sc.)

##### ***Graduated:***

- Jason Frautschi (M.Sc.), NCSU 2003
- Jinghua Zhong (M.Sc.), NCSU 2003
- Edson Paolo Da Silva (Dr.-Ing.), TU Berlin, 2000
- Oliver Kastner (Dipl.-Ing.), TU Berlin, 1999
- Norbert Papenfuss(Dipl.-Ing.), TU Berlin, 1998