

Yiding Cao

Name and academic rank:

Yiding Cao, Professor and ASME Fellow

Degrees with fields, institutions and date:

Ph.D.Mechanical Engineering, University of Dayton, Ohio, December 1991

M.S.Thermal Engineering, Chongqing University, PRC, July 1984

B.S.Power Engineering, Harbin Engineering University, PRC, February 1982

Number of years service of this faculty, date of original appointments, and dates of advancement in rank:

20 Years

Professor, Florida International University, 2008-present

Associate Professor, Florida International University, 1998-2007

Assistant Professor, Florida International University, 1993-1998

Other related experience:

Research Scientist/Research Associate, Wright State University, Dayton, Ohio, 1987-1993.

Instructor, Dept. of Chemical Engineering, Chendu University of Science and Technology, Chengdu, PRC, 1984-1986

Technician, Guangfu Machinery Plant, PRC, 1973-1978

Consulting, patents, etc.:

(15 U.S. patents)

1. Cao, Y., 2018, Wear Management Device for Electromagnetic Launchers, under review.
 2. Cao, Y., 2018, Heat Pipe Dry Cooling System, PCT patent No. 10,030,913.
 3. Cao, Y., 2012, Heat Engine and Refrigerator, US patent No. 8,176,748.
 4. Cao, Y., 2011, Heat Engine, US patent No. 7,937, 943.
 5. Cao, Y., 2011, Refrigerator, US patent No. 7,784,300.
 6. Cao, 2011, "Cao Fuel Cell Stack with Large Specific Reactive Surface Area," U.S. Patent No. 8,076,042.
 7. Cao, Y, 2009, "Cycles of Internal Combustion Engine with Increased Expansion Ratio, Constant-Volume Combustion, Variable Compression Ratio, and Cold Start Mechanism," US Patent No. 7,624,709.
 8. Cao, Y. and Gao, M., 2005, "Reciprocating-Mechanism Driven Heat Loop," U.S. Patent No. 6,684,941.
 9. Guo, Z. and Cao, Y., 2004, "Passive Fluid Pump and Its Application to Liquid-Feed Fuel Cell System," U.S. Patent Publication No. 20060046123.
 10. Cao, Y., 2002, "Waste Heat Recovery Means for Fuel Cell Power System", U.S. patent No. 6,926,979.
 11. Wang, Q. and Cao, Y., 2001, "Isothermal Journal Bearing," U.S. Patent No. 6210042.
 12. Cao, Y., 1998, "Gas Turbine Rotor Blade," U.S. Patent allowed.
 13. Cao, Y. and Wang, Q., 1996, "Engine Piston," U. S. Patent No. 5454351.
 14. Cao, Y., 1996, "Heat Pipe Engine Cooling Radiator," U.S. Patent abandoned.
 15. Cao, Y., 1995, "Human Body Cooling Suit," U. S. Patent No. 5386701.
- Technical Consultant to ABB Air Preheater Inc., 1993-1994.

Principal publications (Last five years):

(Out of 75 Journal Papers)

1. Popoola, O.T., Bamgbade, A., and Cao, Y., 2016, "A Numerical Model of a Reciprocating-Mechanism Driven Heat Loop (RMDHL) for Two-Phase High Heat Flux Cooling," *ASME Journal of Thermal Science and Engineering Applications*, 8(4), 041006, doi: 10.1115/1.4034059.
2. Reding, B. and Cao, Y., 2016, "Sector Rotating Heat Pipe With Interconnected Branches and Reservoir for Turbomachinery Cooling," *J. Heat Transfer* 139(1), 014503, doi: 10.1115/1.4034487.
3. Popoola, O. T., Soleimanikutanaei, S., and Cao, Y., 2016, "Numerical Simulation of a Reciprocating-Mechanism Driven Heat Loop (RMDHL)," *Journal of Heat Transfer Research*, in press.
4. Hu, L., Chen, D., Li, L., Cao, Y., Yuan, D., Wang, J., and Pan, L., 2015,

“Investigation on the performance of the supercritical Brayton cycle with CO₂-based binary mixture as working fluid for an energy transportation system of a nuclear reactor,” *Energy*, Vol. 89, pp. 874–886.

5. Wang, F., Cao, Y. and Zhou, J., 2015, “Thermodynamic analysis of high-temperature helium heated fuel reforming for hydrogen production,” *International Journal of Energy Research*, Vol. 39, pp. 418–432.
6. Wang, F., Cao, Y., and Guoqiang Wang, G., 2015, “Thermoelectric generation coupling methanol steam reforming characteristic in microreactor”, *Energy*, Vol. 80, pp. 642-653.
7. Chen, D., Ye, X., and Cao, Y., 2015, “FULL-CYCLE SIMULATION OF DIESEL ENGINE PERFORMANCE WITH THE EFFECT OF HEAT TRANSFER TO THE ENVIRONMENT,” *Journal of Heat Transfer Research*, Vol. 47, Issue 1.
8. Cao, Y., 2014, “Theory and performance analysis of a new heat engine for concentrating solar power,” *Int. J. Energy Res.*, DOI: 10.1002/er.3187.
9. Cao, Y., Reding, B., and Ling, J., 2014, “Experimental Study of Miniature Radially Rotating Heat Pipes with Water as the Working Fluid,” *Journal of Heat Transfer Research* 45(2), 137–144.
10. Cao, Y., Reding, B., and Gao, M., 2013, Rotating Miniature and Sector Heat Pipes for Cooling Gas Turbine Rotor Blades and Disks, *Journal of Heat Transfer Research*, 44(1), pp. 1-14 (2013).

Research interests:

Fluid flow and heat transfer, electronics cooling, heat pipes, gas turbine engines, internal combustion engines, fuel cells, heat engines, green refrigerators, solar energy, and aerospace engineering.

Funded research projects:

29 externally funded research grants at FIU as a PI or Co-PI in excess of \$4.70 million from the Air Force Office of Scientific Research, Air Force Research Lab Power Division, Air Force Research Lab Turbine Division, DARPA, Army, Office of Naval Research, NASA, and NSF.

Professional affiliations:

Member of ASME.

Honors and awards:

Excellence in Research Award, FIU, 1997.

Institutional and professional services in the last five years:

Director of MME graduate program, 2014-Spring 2018.

Reviewer for NSF, DOE, and more than 10 technical journals.

Department Representative of College Reward Committee.

Department Representative of College Tenure and Promotion Committee

Department Representative of College Faculty Council

Member of MME Department Graduate Committee.