

## Research Grants Approved and Funded

- Koratkar has won **35 grants (totaling ~ \$11 Million)** from several agencies such as the National Science Foundation, Office of Naval Research, Army Research Office, Advanced Energy Consortium and Industry (Motorola, Honeywell).
  - **Seventeen of these awards are from the National Science Foundation (NSF)** including highly prestigious awards such as CAREER and two separate Nanoscale Interdisciplinary Research Team (NIRT) awards.
  - Koratkar is **Principal Investigator (PI) on 30 of the 35 awards** that he was won.
- (1) Sponsor: New York State Energy Research and Development Authority (NYSERDA)  
Title: A Paradigm Shift in the Economics of High Performance Lithium-Ion Battery Anodes Using Low-Cost Silicon Nanoparticles & Low-Cost Graphene-like Carbon  
Funds: \$97,983  
Period: 05/01/18-12/31/19  
Effort: Principal Investigator
  - (2) Sponsor: United States Army  
Title: Vertical Lift Research Center of Excellence (VLRCOE) at Rensselaer Polytechnic Institute  
Funds: \$1,600,000  
Period: 01/01/18-12/31/21  
Effort: Co-Investigator (PI: Dr. Farhan Gandhi)
  - (3) Sponsor: **National Science Foundation (NSF)**  
Title: Demonstration & Device Level Characterization of Li-ion Batteries with Graphene and Graphene-Silicon Based Anodes in Pouch and Cylindrical Cell Form Factors  
Funds: \$200,000  
Period: 09/01/16-02/28/18  
Effort: Principal Investigator
  - (4) Sponsor: **National Science Foundation (NSF)**  
Title: Transition Metal Doping in Two-Dimensional, Atomically Thin Semiconductors  
Funds: \$398,802  
Period: 09/01/16-09/01/19  
Effort: Principal Investigator
  - (5) Sponsor: **National Science Foundation (NSF)**  
Title: Dendrite-Free Storage of Lithium Metal in Porous Graphene Networks  
Funds: \$300,000  
Period: 09/15/15-09/14/18  
Effort: Principal Investigator
  - (6) Sponsor: New York State Energy Research and Development Authority (NYSERDA)  
Title: Scalable Graphene Anodes  
Funds: \$69,000  
Period: 01/01/16-08/01/17  
Effort: Principal Investigator

- (7) Sponsor: **National Science Foundation (NSF)**  
Title: Scalable manufacturing of photo-thermally reduced graphene paper for next generation Lithium-ion batteries  
Funds: \$300,000  
Period: 08/01/14-08/01/17  
Effort: Principal Investigator
- (8) Sponsor: Honeywell  
Title: Graphene ceramic nanocomposites- synthesis and characterization  
Funds: \$75,000  
Period: 08/01/14-08/01/15  
Effort: Principal Investigator
- (9) Sponsor: New York State Energy Research and Development Authority (NYSERDA)  
Title: High Energy Density Cathode Materials for Use in Lithium-Sulfur Batteries Through a Green Chemistry Approach  
Funds: \$122,000  
Period: 08/01/14-08/01/16  
Effort: Co-Investigator
- (10) Sponsor: **National Science Foundation (NSF)**  
Title: Fundamental study of wear in graphene composites  
Funds: \$378,418  
Period: 08/01/2012 - 08/01/2015  
Effort: Principal Investigator
- (11) Sponsor: National Research Foundation of Korea (Through KAIST University)  
Title: Three-dimensional high energy density batteries  
Funds: \$250,000  
Period: 01/01/2013 - 01/01/2016  
Effort: Principal Investigator
- (12) Sponsor: New York State Energy Development and Research Authority (NYSERDA)  
Title: Graphene based anodes for Li-ion batteries with breakthrough improvements in energy density, power density and cycle stability  
Funds: \$118,000  
Period: 09/01/2013 - 01/01/2015  
Effort: Principal Investigator
- (13) Sponsor: **National Science Foundation (NSF)**  
Title: Physics-Based Study of Graphene Colloidal Systems as Metal Working Fluids for Micro-Machining Applications  
Funds: \$393,775  
Period: 08/01/2011 - 08/01/2014  
Effort: Co-Investigator
- (14) Sponsor: Advanced Energy Consortium (AEC)  
Title: Nanofluidic Power Generation using Two-Dimensional (Graphene) Nanomaterials  
Funds: \$700,000  
Period: 01/01/2010 - 04/01/2013  
Effort: Principal Investigator

- (15) Sponsor: **National Science Foundation (NSF)**  
Title: Brittle Epoxies Rendered Ductile- Crazing in Thermosetting Epoxy Nanocomposites  
Funds: \$365,740  
Period: 09/01/2009 - 09/01/2013  
Effort: Principal Investigator
- (16) Sponsor: **National Science Foundation (NSF)**  
Title: Next Generation Li-Ion Batteries Featuring Nano-Engineered Anode Architectures  
Funds: \$396,092  
Period: 08/01/2010 - 08/01/2013  
Effort: Principal Investigator
- (17) Sponsor: NYSERDA  
Title: Next Generation High C-Rate Lithium-Ion Rechargeable Batteries  
Funds: \$200,000  
Period: 09/01/2010 - 09/01/2012  
Effort: Principal Investigator
- (18) Sponsor: Office of Naval Research (ONR)  
Title: Hierarchical Nano-Composites: Dramatic Enhancements in Fatigue Resistance and Toughening  
Funds: \$350,000  
Period: 09/01/2009 - 09/01/2012  
Effort: Principal Investigator
- (19) Sponsor: **National Science Foundation (NSF)**  
Title: Fundamental study of nucleate boiling on nanostructured interfaces  
Funds: \$325,000  
Period: 09/01/2009 - 09/01/2012  
Effort: Co-Investigator
- (20) Sponsor: Physical Sciences, Inc. (Army STTR program- Phase 2 funding)  
Title: Self-Healing, Reinforced, Multifunctional Composite Material  
Funds: \$112,478  
Period: 05/01/2012 - 03/01/2013  
Effort: Principal Investigator
- (21) Sponsor: US Army- Penn State Vertical Lift Research Center of Excellence (VLRCOE)  
Title: Next Generation Carbon-Nanotube/Carbon-Fiber Composites for Mechanical Properties Enhancement and Structural Monitoring  
Funds: \$259,000  
Period: 06/01/2006 - 06/01/2011  
Effort: Principal Investigator
- (22) Sponsor: **National Science Foundation (NSF)**  
Title: Fundamental Study of Photo-Thermo-Mechanical Actuation in Carbon Nanotubes and their Composites  
Funds: \$200,000  
Period: 08/01/2007 - 07/31/2011  
Effort: Principal Investigator

- (23) Sponsor: **National Science Foundation (NSF)**  
Title: NSF-DFG Research Conference on Nanoscience and Nanotechnology  
Funds: \$ 99,325  
Period: 09/01/2009 - 08/31/2010  
Effort: Principal Investigator
- (24) Sponsor: **National Science Foundation (NSF)**  
Title: CAREER: Advanced Nanostructured Damping Materials  
Funds: \$400,000  
Period: 07/01/2004 - 06/31/2009  
Effort: Principal Investigator
- (25) Sponsor: **National Science Foundation (NSF)**  
Title: NIRT: Miniaturized Chemical Sensors Featuring Electrical Breakdown near Carbon Nanotube Tips  
Funds: \$1300,000  
Period: 09/01/2004 - 08/31/2009  
Effort: Principal Investigator
- (26) Sponsor: **National Science Foundation (NSF)**  
Title: NIRT: Fundamental Study of Electro- and Magneto-Mechanical Nano-Assemblies  
Funds: \$1150,000  
Period: 09/01/2005 - 08/31/2009  
Effort: Co-Investigator
- (27) Sponsor: Motorola  
Title: Carbon Nanotube Devices for RFID Application  
Funds: \$65,000  
Period: 01/01/2008 - 04/01/2009  
Effort: Principal Investigator
- (28) Sponsor: US Army Aviation & Missile Research, Development & Engineering Center  
Title: Carbon Nanotube Composites for Structural Health Monitoring  
Funds: \$42,000  
Period: 12/01/2007 - 08/30/2008  
Effort: Principal Investigator
- (29) Sponsor: Department of Defense  
Title: DURIP: Nano-Composites Characterization Facilities in Support of US Army Funded Research at the Rensselaer Polytechnic Institute  
Funds: \$150,000  
Period: 08/01/2007 - 07/31/2008  
Effort: Principal Investigator
- (30) Sponsor: US Army Benet Labs  
Title: Fatigue Crack Growth Suppression in Carbon Nanotube Composites  
Funds: \$15,000  
Period: 01/01/2008 - 12/31/2008  
Effort: Principal Investigator

- (31) Sponsor: **National Science Foundation (NSF)**  
Title: NER: Water Electrolysis Activated by Nanostructured Electrodes:  
An Efficient Approach for Hydrogen Production  
Funds: \$100,000  
Period: 09/01/2006 - 09/01/2007  
Effort: Principal Investigator
- (32) Sponsor: Army Research Office  
Title: Multifunctional Carbon Nanotube Damping Films  
Funds: \$238,552  
Period: 04/13/2003 - 04/12/2006  
Effort: Principal Investigator
- (33) Sponsor: **National Science Foundation (NSF)**  
Title: NUE: Thermal and Electrical Transport in Carbon Nanotube Films  
Funds: \$100,000  
Period: 08/01/2003 - 04/01/2005  
Effort: Principal Investigator
- (34) Sponsor: **National Science Foundation (NSF)**  
Title: NER: Minimally Intrusive Damping Films Featuring Carbon Nanotubes  
Funds: \$100,000  
Period: 09/01/2002 - 08/30/2003  
Effort: Principal Investigator
- (35) Sponsor: Mainstream Engineering Corporation  
Title: Carbon Nanotube Based Ultracapacitors for High Pulse-Power Applications  
Funds: \$21,000  
Period: 07/01/2004 - 02/30/2005  
Effort: Principal Investigator