Remembering George Crabtree

George was a distinguished materials physicist

- Ph.D. degree from University of Illinois at Chicago, 1974 and joined Argonne National Laboratory the same year
- He was a PI beginning in 1974 under the Atomic Energy Commission Division of Physical Research --- which eventually became BES
- Professor of physics at Northern Illinois University (1990 to 2003) and at the University of Illinois at Chicago (2010-2023)
- Over 440 publications; h-index of 80; most cited papers are on magnetic properties of high Tc superconductors, especially vortex motion
- Many honors including National Academy of Sciences (2008) and Kamerlingh-Onnes Prize (2003) for his work on the physics of vortices in high-temperature superconductors

George was an important leader and manager of research

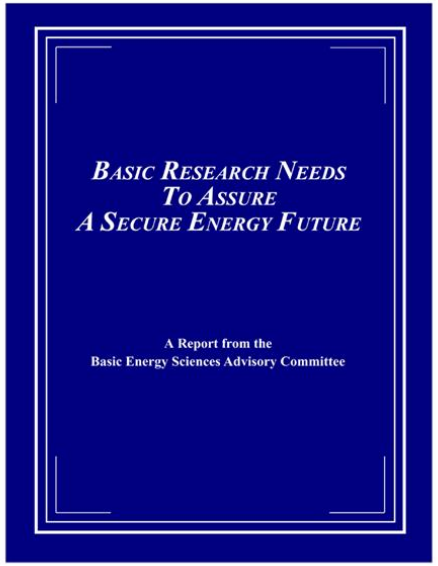
- In 2010, DOE launched the Energy Innovation Hubs across the Department
  - Modeled on the proactive approach to science management exemplified by the Manhattan Project and AT&T's legendary Bell Laboratories
  - Integrated, multidisciplinary research centers that combine basic and/or applied research with engineering to accelerate scientific discovery and address critical energy issues
  - **"Dream teams" of researchers**… with strong leadership, providing a centroid for research in the fields that they represented
  - Initial topics: Nuclear energy, Solar Fuels, and Buildings Efficiency
- In 2012, BES released the request for proposals for a Batteries and Energy Storage Hub
- The successful team, the Joint Center for Energy Storage Research, was led by ANL with Director George Crabtree.
- JCESR completes its 10^{th} and final year in 2023

George was a leader of BES strategic planning

- In 2002 BES began a new approach to planning for priority research directions to address significant challenges for improved and innovative energy technologies
- The now-standard Basic Research Needs workshop approach:
  - ❖ Workshop chair/co-chair from the community experts plus panel leads for specific, small group, discussions
  - ❖ 3-day workshop ~100 participants with plenary talks, small group discussions, reconvening for updates during the activities, resulting in a consensus view of priority research directions for basic research
  - ❖ Provide community resources on BES webpages: a pre-workshop document summarizing the factual status of the field and a post-workshop report on the priority research directions and summaries of the discussions supporting these.
  - ❖ Subsequent reference to the reports and research directions in funding opportunities.

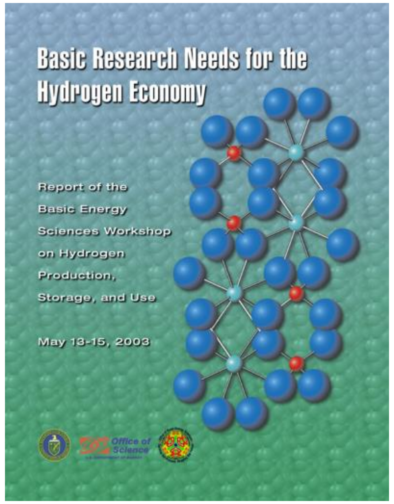
The first BRN Report 2003

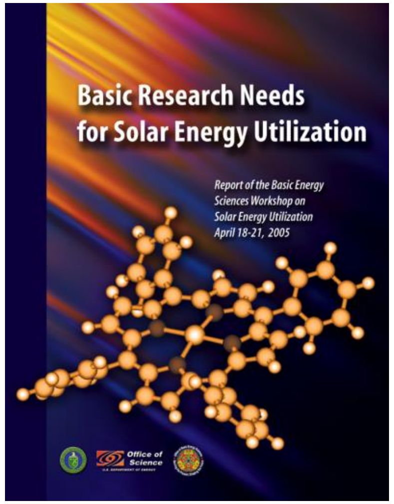
- Overall report co-chaired by Linda Horton
- Workshops in a wide variety of energy topics
- George chaired the workshop on “Renewable and Solar Energy”

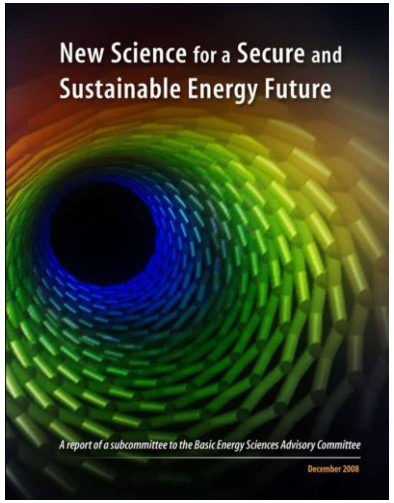


George led many workshops and reports

- 2003: Hydrogen Economy (led to Physcis Today article by George, Millie Dresselhaus and Michelle Buchanan)
- 2005: Solar Energy Utilization
- 2008: New Science for a Secure and Sustainable Energy Future – Assessment of the preceding 12 BRN workshops. Recommendations provided foundations for the BES Energy Frontier Research Centers, DOE Energy Innovation Hubs, and SC Early Career programs
  - ❖It will take "**dream teams**" of highly educated talent, equipped with forefront tools, and focused on the most pressing challenges to increase the rate of discovery.
  - ❖U.S. leadership requires BES to lead a national effort to aggressively recruit the best talent through a series of workforce development and **early career programs** aimed at inspiring today's students and young researchers to be the discoverers, inventors, and innovators of tomorrow's energy solutions.

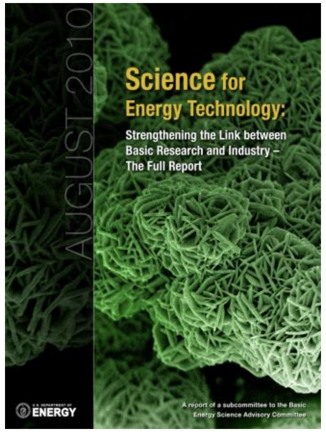


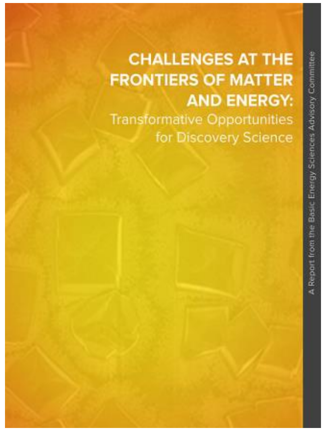


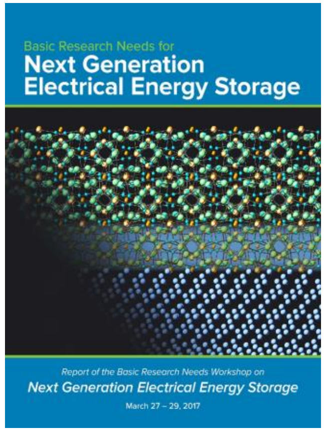


And more…

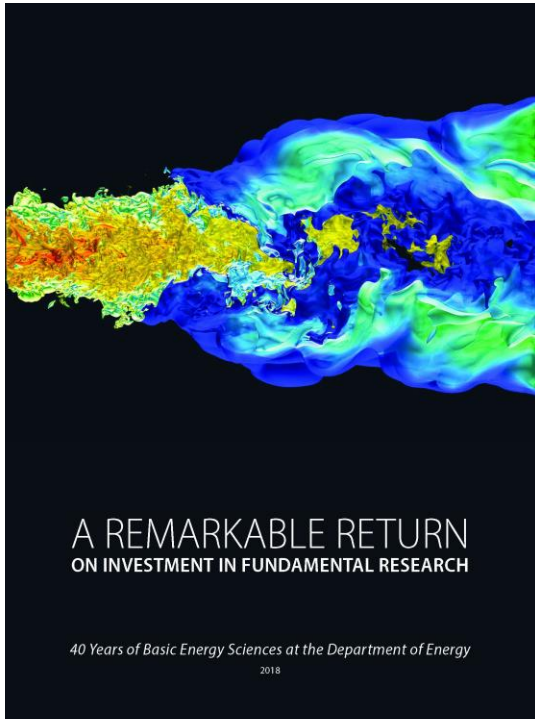
- 2010: Science for Energy Technologies: Strengthening the Link between Basic Research and Industry
- 2012: From Quanta to the Continuum: Opportunities for Mesoscale Science
- 2015: Challenges at the Frontiers of Matter and Energy: Transformative Opportunities for Discovery Science
- 2017: Next Generation Energy Storage

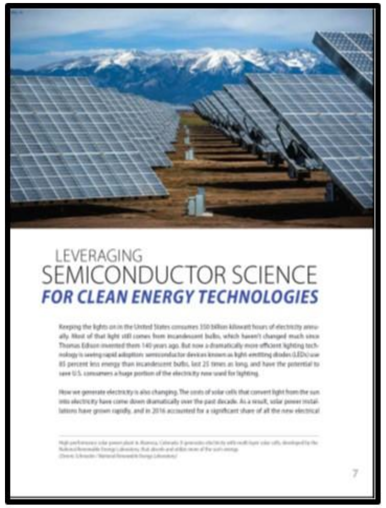


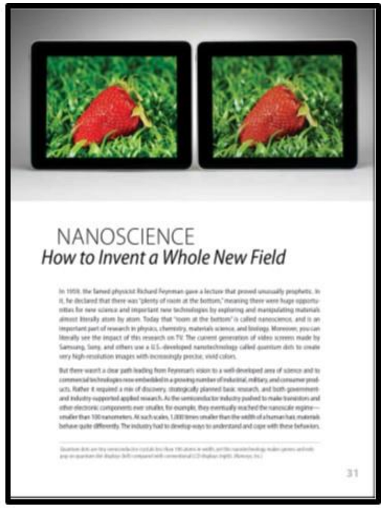


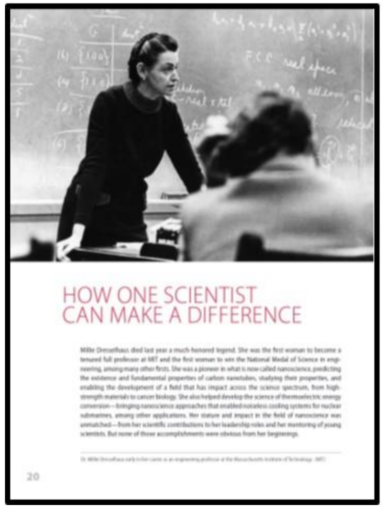


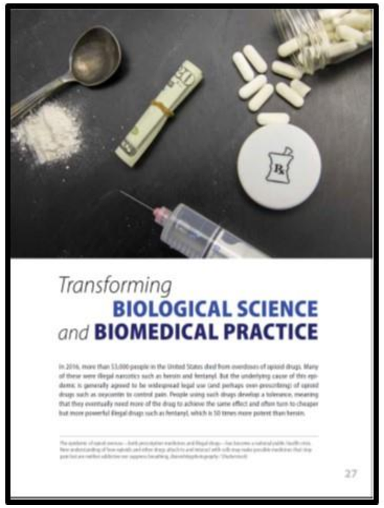
Last but not least…











George will be greatly missed

- Outstanding scientist
- Outstanding scientific leader
- Truly amazing citizen and leader of the BES community