

# WHY SUPPORT RESEARCH AT THE US DEPARTMENT OF ENERGY?

**FOR STARTERS, SO WE CAN REMOVE 95% OF DUST PARTICLES FROM SOLAR PANELS, THEREBY INCREASING THEIR ENERGY EFFICIENCY.**

The mission of the US Department of Energy (DOE) is to ensure America's security and prosperity by addressing its energy, environmental, and nuclear challenges through transformative science and technology solutions. Boston University receives more than \$7.7 million in competitively awarded research funding from the DOE to meet those challenges.

## ■ **BETTER SOLAR PANELS MEAN MUCH BETTER SAVINGS.**

Once considered "out there," solar panels are starting to show up everywhere. One reason for that is the work being done by Boston University researchers. It's no big secret that the amount of energy generated by a solar panel depends on how clean the equipment is. What has been a mystery, though, is how to clean them. BU researchers aim to solve this problem by designing a more self-sufficient panel with a cleaning component that would electrostatically remove dust. The team is one step closer to achieving its goal after the DOE Office of Energy Efficiency and Renewable Energy and the Massachusetts Clean Energy Center awarded grants to support this research.

## ■ **COAL REALLY CAN BE CLEAN.**

The DOE is awarding millions of dollars to seven university-based research teams across the country—including one from Boston University—to spend the next two years advancing fuel cells that generate efficient, cost-competitive electricity from domestic coal with near-zero emissions of carbon dioxide and air pollutants. Fueled by gasified coal, such fuel cells could automatically capture up to 99 percent of carbon dioxide emissions while emitting virtually none of the nitrogen and sulfur oxides (major components of smog) produced by coal-fired power plants.

## ■ **YOU'LL NEVER LOOK AT PENCILS THE SAME WAY AGAIN.**

What's 100 times stronger than steel, micro-thin, a slightly better electrical conductor than copper, and has a potential impact in a world market of one trillion dollars? It's graphene. And it's what makes up the graphite commonly found in pencils. A Boston University physics professor who is researching graphene with support from the DOE Office of Science discovered that the electrons in graphene have unique electronic and optical properties. Since its discovery, researchers have continued to analyze graphene's unique characteristics and are working to bring about its use in a wide array of applications and potential products, such as building more efficient computer chips or creating better, more stable biosensors to diagnose diseases; better solar cells; safer cars; and lighter satellites.

---

We hope you'll give strong consideration to supporting funding for DOE. If you have any questions or would like to discuss further the role that DOE research plays in our daily lives, please visit [bu.edu/federal](https://www.bu.edu/federal).



A BOSTON UNIVERSITY PHYSICS PROFESSOR RESEARCHING GRAPHENE DISCOVERED THAT THE ELECTRONS IN GRAPHENE HAVE UNIQUE ELECTRONIC AND OPTICAL PROPERTIES.