

## News

## Three Penn State researchers awarded scientific grants from Kaufman Foundation



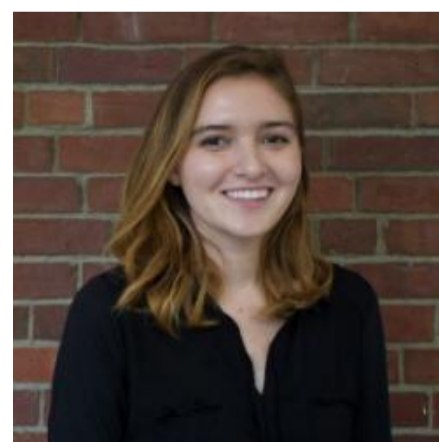
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The Charles E. Kaufman Foundation—a supporting organization of The Pittsburgh Foundation, which works to improve the quality of life in the Pittsburgh region—has selected three researchers from the Eberly College of Science to receive research grants this year. The **foundation awards grants** to scientists at institutes of higher learning in Pennsylvania who are pursuing research that explores essential questions in biology, physics, and chemistry, or that crosses disciplinary boundaries.

## Death throes of some stars

**Ashley Villar**, assistant professor of astronomy and astrophysics and co-hire of the Institute for Computational and Data Sciences at Penn State, was selected to receive a New Investigator grant for her project titled “Unveiling the Final Days of Stellar Life Through Exotic Explosions.” New Investigator grants empower scientists at the beginning of their careers who seek to make a mark in their fields and address core principles in biology, physics, and chemistry or across the disciplinary boundaries of these field.

Villar will study a rare type of supernova—the explosive death of a star—called a Type II<sub>n</sub> supernova. Prior to these rare supernovae, the star produces a “death throe” for months to years before its ultimate explosion, ejecting a considerable amount of material that then surrounds the star and that becomes shock heated during the supernova. Villar will combine techniques from high energy physics, machine learning, and statistics to analyze these events and improve our understanding of why only



# Generating new nanoscale alloys

**Ben Lear**, associate professor of chemistry, and **Raymond Schaak**, DuPont Professor of Materials Chemistry and professor of chemical engineering, were selected to receive a New Initiatives grant for their project titled “Nanoscale Optical Heating for the Generation of High Entropy Nanomaterials.” New Initiatives grants are awarded to encourage investigators with strong research records to establish interdisciplinary collaborations requiring expertise beyond that of any single researcher and taking a novel approach to the topic in question.



Lear and Schaak will explore new ways to create a special type of alloys—materials with random arrangement of their components—at the nanoscale. Known nanoscale alloys have important roles in catalyzing—facilitating and speeding up—reactions involved in the creation of plastics and pharmaceuticals, and these “high entropy alloys”—made from five or more elements that are mixed at extremely high temperatures—could yield a variety of desirable material properties. Lear and Schaak will combine their expertise to overcome challenges in traditional heating and cooling methods to ensure that the alloy components remain mixed, ultimately establishing a fundamentally new approach to materials synthesis.

## Media Contacts

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