

Remember Mom on *Mother's Day*

TENAFLY

A bright idea! Accolades for Tenafly High School science students

Tenafly High School science research students Kai Song and Harrison Banks were awarded honorable mention in the grades 10-12 category at the TOSHIBA/NSTA (National Science Teaching Association) Exploravision STEM Competition for their project, Gladstone: A Quantum Dot Powered Point of Care Testing System.

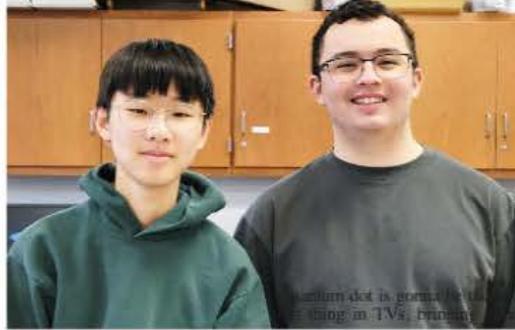
The National Science Competition focuses on team research in any science-technology field. A teacher will guide his or her students as they pick a current technology, research it, envision what

it might look like in 10 or more years, and describe the development steps, pros and cons, and obstacles.

Past winners have envisioned technologies ranging from a handheld food allergen detector to a new device to help people who have lost limbs regain movement in real time.

Song and Banks' project focused on the use of quantum dots to assist with the testing and care typically conducted by clinical personnel or self-testing by a patient.

Nanowerk says quantum dots



Pushing the envelope: Kai Song (left) and Harrison Banks take honorable mention at the Toshiba Exploravision STEM Competition. *Tenafly High School photo.*

(QDs) "are man-made nanoscale crystals that can transport electrons. When UV light hits these semiconducting nanoparticles, they can emit light of various colors. These artificial semiconductor nanoparticles that have found applications in composites, solar cells and fluorescent biological labels."

In 2015, *Wired* explained the potential of QD, which then was trending at the annual Consumer Electronics Show: "You may have heard people say it's all hype. Those people can go pound sand,

image quality to cheaper sets."

More to Song and Banks' research, *Micromachines* (2020) devoted a special issue to "Quantum Dots: An Emerging Tool for Point-of-Care Testing," noting "Microsystem-enabled healthcare systems can not only benefit developed nations by providing innovation in healthcare, but also allow expansion of advanced healthcare concepts to developing nations."

The journal says, "Thus, the concept of microsystems is likely to create new generations of POCT helping early diagnosis, allowing



Vials of quantum dots produce vivid colors. For instance, a cadmium-based quantum dot showing pure, highly specific green color response. *Nanowerk/NASA.*

determination of prognosis, reducing morbidity, and improving therapeutic outcomes; alternatively, they can be applied for entirely new indications"

The editors say, "It is important to emphasize that there is a significant knowledge gap regarding QDs and their effects within the field of point-of-care testing. We therefore draw upon what is known about various types of QDs and their clinical utilities to generate hypotheses that could drive future research and benefit technologically applied fields."

For more information on Exploravision, visit exploravision.org. For more information on Tenafly High School, visit tenaflyschools.org/th.s.

— John Snyder

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