NANO LETTERS

pubs.acs.org/NanoLett

VIEWPOINT

Announcing the Winner of the Inaugural *Nano Letters* Seed Grant Program, Europe and Australia Region

Nanshu Lu* and Jwa-Min Nam*

Cite This: https://doi.org/10.1021/acs.nanolett.2c03880

Read Online

ACCESS | Metrics & More | Article Recommendations

Downloaded via UNIV OF TEXAS AT AUSTIN on October 13, 2022 at 19:38:09 (UTC).
See https://pubs.acs.org/sharingguidelines for options on how to legitimately share published articles.

In March 2022, *Nano Letters* launched a brand new Seed Grant Program to foster the intellectual contribution to nanoscience from young researchers all over the world.[1] Following the successful completion of two rounds of competitions first in North America[2] and then in East Asia,[3] applications from Europe and Australia were invited in August. The applications we have received demonstrated both breadth and depth, ranging from biological applications such as cancer cell targeting via DNA condensates or targeted drug delivery facilitated by large-pore silica nanoparticles to fundamental physics such as quasi-bound states in the continuum or applied photonics such as quantum emitters based on strained 2D crystals. We are particularly delighted to find good gender and ethnic diversities in the applicant pool from Europe and Australia, which signifies the ever-growing inclusiveness of our nanoscience community. Submissions from South/Central America, South Asia, and Africa will open in October, and upon completion, it will conclude the inaugural *Nano Letters* Seed Grant Program. A single awardee from each region is selected and granted $2,500 to deliver the proposed research. One year after the seed grant is awarded, the awardees will be invited to write Viewpoints on their research accomplished and present their work as part of a *Nano Letters* symposium.

Following the evaluation rules,[1] we selected the top five proposals submitted from Europe and Australia according to three criteria: significance, innovation/impact, and synergy with the *Nano Letters* mission, and a final decision was made with the Editor-in-Chief. We are pleased to announce the winner of the inaugural *Nano Letters* Seed Program for Europe and Australia, **Elena Blundo,** a third-year doctoral student at the Optical Spectroscopy of Nanostructured Materials laboratory in **Sapienza, University of Rome**. Elena is supervised by **Prof. Antonio Polimeni**. Elena is a prolific young researcher investigating strained 2D crystals, especially the mechanical and photonic properties of bubbles and domes formed by 2D crystals.[4] She proposes to fabricate an array of nanodomes of monolayer transition metal dichalcogenides (TMD) through irradiation to achieve near-ideal single-photon sources emitting at telecom wavelengths. Quantum emitters (QEs) operating at telecom wavelengths would enable the implementation of quantum technologies through fiber-based optical communication networks. Compared with quantum dots, the proposed QEs can be obtained with relatively low costs, are mechanically tunable, and can be easily integrated into photonic circuits. Outside of academia, Elena is a Taekwondo Poomsae and Freestyle athlete, black belt, IV dan. She is a 10-time National Champion and has conquered numerous medals at European and World competitions. Congratulations to Elena on her outstanding proposal. We hope that her success in both athletic and research careers can be an inspiration for all types of professionals to pursue academic excellence.

Although only one winner could be selected, we also highlight four finalists. The runners-up submitted outstanding original proposals, which will no doubt make important contributions to the field of nanoscience. In alphabetical order of their last name, the finalists are

Nada Farag, Università degli Studi di Roma "Tor Vergata" (Supervisor: Prof. Ricci Francesco). Nada's proposal focuses on base excision repair (BER) enzyme-responsive DNA nanostructures that can be assembled to form DNA condensates. This can be coupled with fluorescence assays using mutated substrate DNA strands labeled with different fluorophores to provide a programmed, orthogonal way of modulating the transition from DNA nanostructures to DNA condensates. The structure and method are promising in bioimaging and cancer-targeted therapeutic applications.

Magdalene Ho, Imperial College London (Supervisor: Prof. Benjamin Almquist). Magdalene's proposal starts with a question "can we employ this mechanical mechanism on the nanoscale, with DNA duplexes, to trigger biological events in our bodies?". An anchored short DNA strand with a "handle" (e.g., cell-adhesive peptides) (STrAP) allows cells to pull on the strand to stretch it, and cellular traction force (CTF) is exerted on STrAPs for disrupting the complementary base pairing to trigger the separation of the complementary DNA. STrAPs can

be useful for a wide range of applications including activation of biological events for therapeutic delivery and real-time imaging.

Andrea Mancini, Ludwig Maximilian University of Munich (Supervisor: Prof. Stefan Maier). Andrea is merging the quasi-bound states in the continuum (qBIC) concept with surface phonon polaritons (SPhPs) to realize localized SPhP-driven qBIC resonances with unusual electromagnetic properties. Andrea chooses to use silicon carbide (SiC) because it can be readily fabricated, features a high energy, wide Reststrahlen band with low losses and is widely used in quantum optics and power electronics.

Prithu Roy, Institut Fresnel, Aix-Marseille University (Supervisor: Prof. Jerome Wenger). Prithu proposes to develop a new kind of UV resonant plasmonic nanogap antenna featuring self-assembled rhodium nanocubes with nanometer interparticle gap sizes. Label-free protein sensing techniques featuring single molecule resolution could reveal the reactivity and dynamics of proteins, opening new pathways to fast drug research, personalized medicines, and cancer treatments.

AUTHOR INFORMATION

Corresponding Authors

Nanshu Lu − *Department of Aerospace Engineering and Engineering Mechanics, The University of Texas at Austin, Austin, Texas 78712, United States;* orcid.org/0000-0002-3595-3851; Email: nanshulu@utexas.edu

Jwa-Min Nam − *Department of Chemistry, Seoul National University, Seoul 08826, South Korea;* orcid.org/0000-0002-7891-8482; Email: jmnam@snu.ac.kr

Complete contact information is available at: https://pubs.acs.org/10.1021/acs.nanolett.2c03880

Notes

The authors declare no competing financial interest.

REFERENCES

(1) Odom, T. W. Nano Letters Seed Grants. *Nano Lett.* **2022**, *22* (6), 2163−2163.

(2) Dionne, J. A.; Xiong, Q. H. Announcing the Winner of the Inaugural Nano Letters Seed Grant Program, North America Region. *Nano Lett.* **2022**, *22*, 5067.

(3) Besley, E.; Nuckolls, C. Announcing the Winner of the Inaugural Nano Letters Seed Grant Program, East Asia Region. *Nano Lett.* **2022**, *22* (16), 6463−6464.

(4) (a) Blundo, E.; Cappelluti, E.; Felici, M.; Pettinari, G.; Polimeni, A. Strain-tuning of the electronic, optical, and vibrational properties of two-dimensional crystals. *Appl. Phys. Rev.* **2021**, *8* (2), 021318. (b) Blundo, E.; Yildirim, T.; Pettinari, G.; Polimeni, A. Experimental Adhesion Energy in van der Waals Crystals and Heterostructures from Atomically Thin Bubbles. *Phys. Rev. Lett.* **2021**, *127* (4), 046101 DOI: 10.1103/PhysRevLett.127.046101. (c) Blundo, E.; Surrente, A.; Spirito, D.; Pettinari, G.; Yildirim, T.; Chavarin, C. A.; Baldassarre, L.; Felici, M.; Polimeni, A. Vibrational Properties in Highly Strained Hexagonal Boron Nitride Bubbles. *Nano Lett.* **2022**, *22* (4), 1525−1533.

https://doi.org/10.1021/acs.nanolett.2c03880
Nano Lett. XXXX, XXX, XXX−XXX