

Diamond 2D

Unleash the power of AI on
your cellphone



To ensure continuous advancement in technological innovation, we need more powerful and compact microchips.

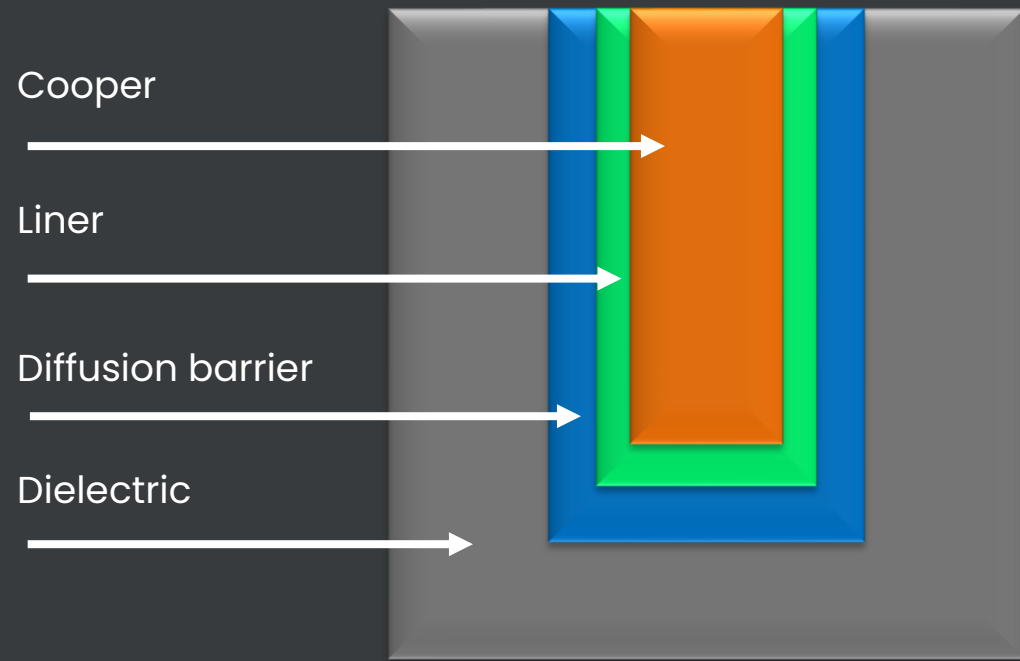


The problem

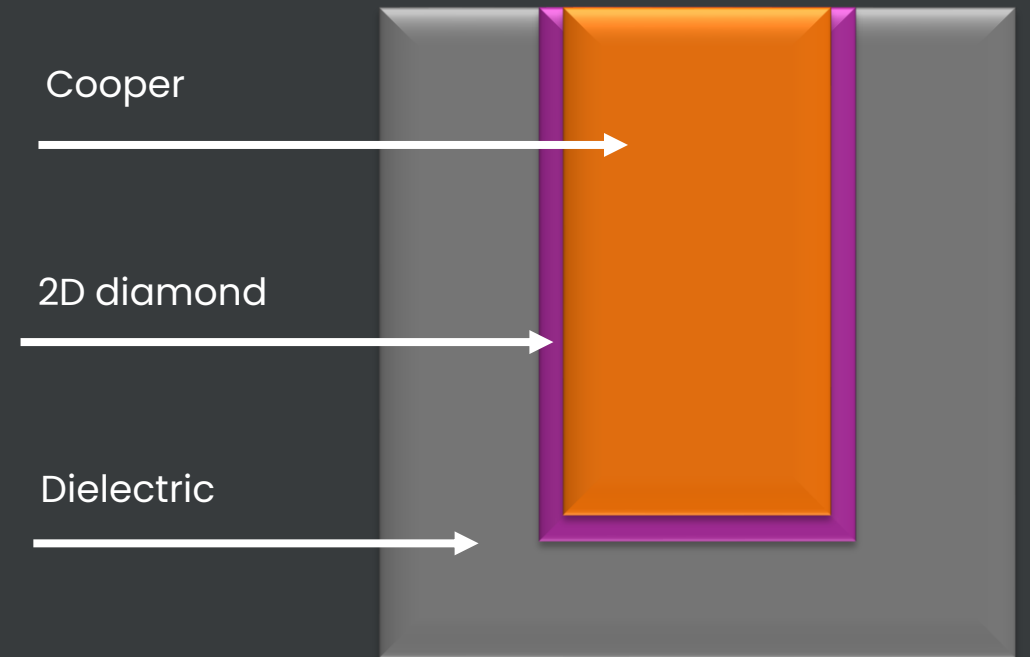
Technological evolution requires high-speed microchips with expanded capacity. However, conventional metallic connections impose significant limitations on electric conductivity and scalability, presenting a crucial challenge for progress in fields such as artificial intelligence.



The solution: 2D diamond



Current

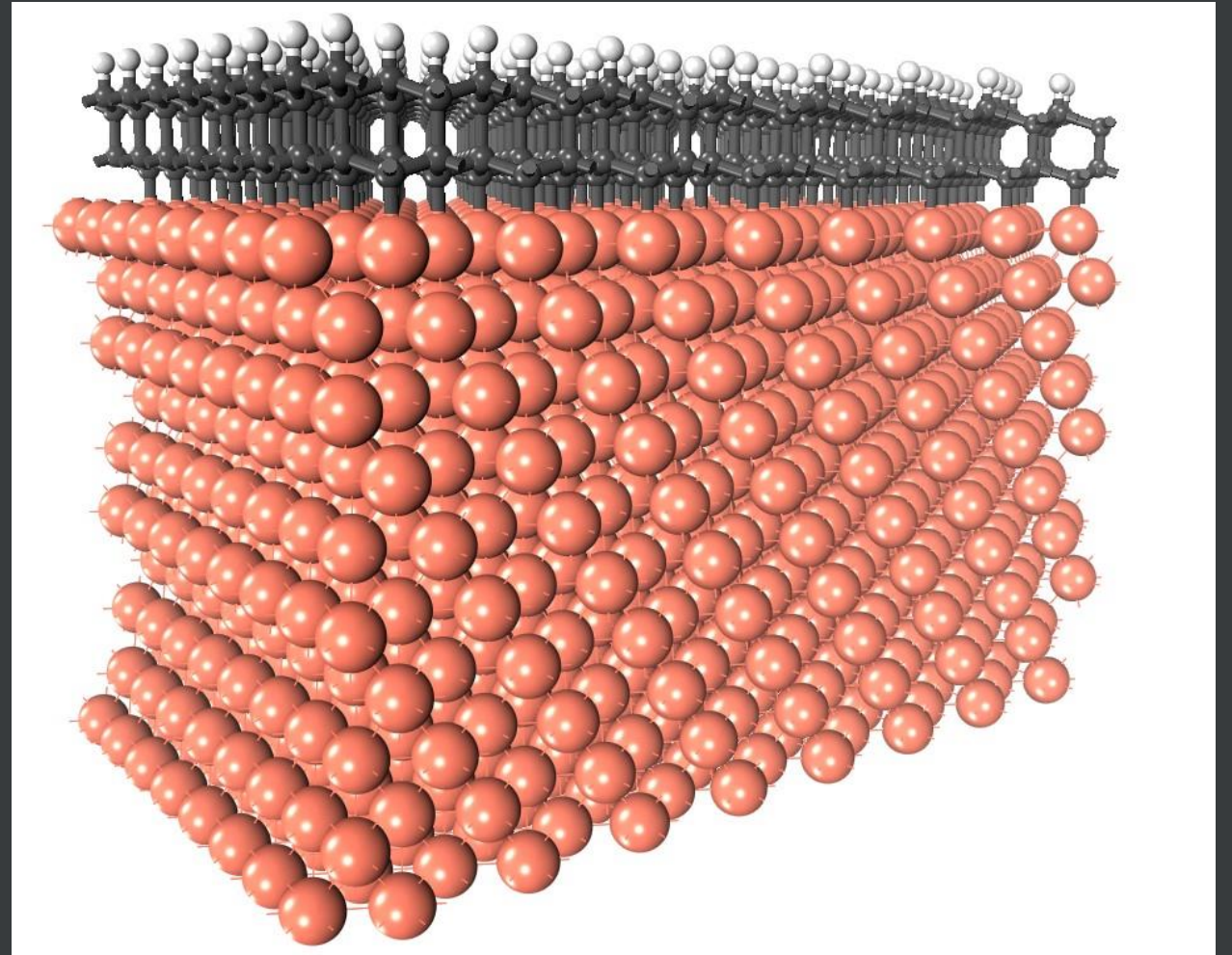


New

2D diamond

It's an eco-friendly innovative nanomaterial that possesses all the physical properties necessary to improve the performance of electric cables.

2D diamond significantly reduces the electrical resistance of the wires that transmit current in microchips, freeing up an additional 3 to 4 nm for copper.



Features of 2D diamond

Very high thermal conductivity.

Does not require barrier/coating.

Low leakage current, high breakdown voltage.

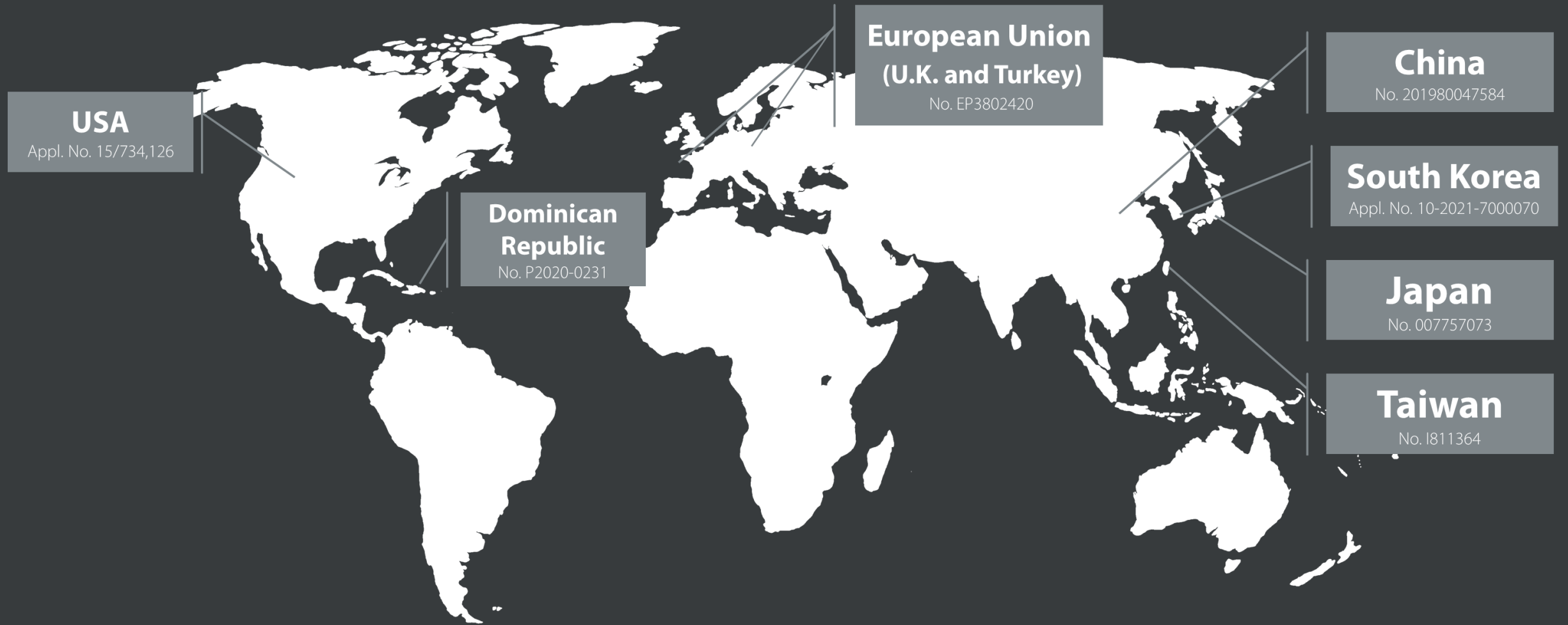
High adhesion strength on copper.

Biocompatibility.

High hardness, high in-plane stiffness.



Patented material



USA

Appl. No. 15/734,126

**Dominican
Republic**

No. P2020-0231

**European Union
(U.K. and Turkey)**

No. EP3802420

China

No. 201980047584

South Korea

Appl. No. 10-2021-7000070

Japan

No. 007757073

Taiwan

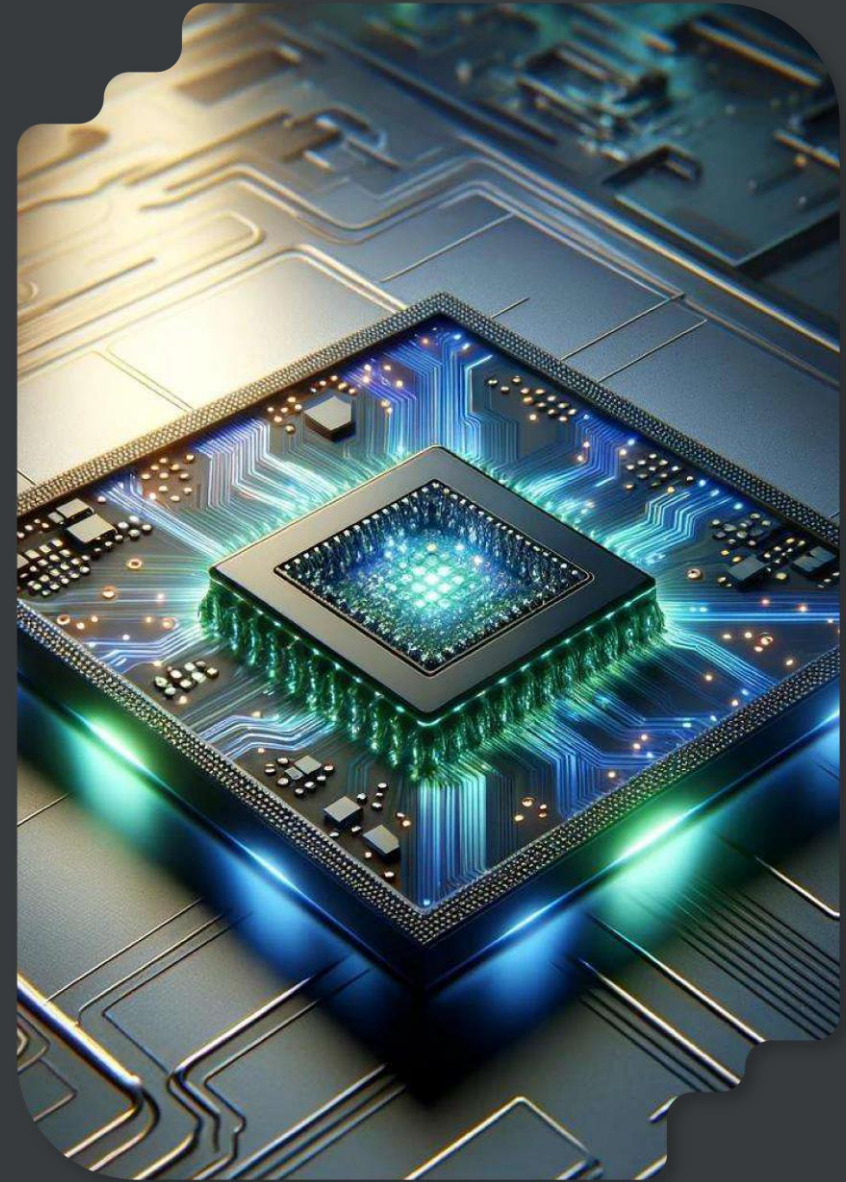
No. I811364

Semiconductor market

INTEL • TSMC • Samsung Electronics • SK Hynix • MediaTek • Micron Technology • Qualcomm • Texas Instruments

80 %
of the global semiconductor market.

> US\$ 215.8
billion per year
in net profits



Next steps



Produce one square centimeter of 2D diamond, with the goal of evaluating various physical properties of the material.

Measure its dielectric breakdown strength, thermal conductivity capacity and stability.

Test the revolutionary potential of 2D diamond for manufacturing more powerful and compact microprocessors.

Our team



Dr. Fabrice Piazza

Ph.D. in Physics, is a pioneer in 2D diamond and leads innovations in nanocarbon materials for technology and health applications. He founded the Nanoscience Laboratory at PUCMM, standing out for patents and international collaborations in advanced nanomaterials for multiple applications.



Dr. Kiero Guerra

Doctor in Quantitative Psychology and Master in the same discipline, Master in Strategic HR Management. Fulbright Scholar, former Vice Chancellor of Research at PUCMM. Specialized in advanced statistics, he has been recognized by Ministry of Higher Education, Science and Technology of the DR for research in growth curve modeling and mathematical simulation.



Martha Baez

Director of Research and Innovation at PUCMM, linked to the private sector in marketing management. Researcher at CEUR/PUCMM and Project Officer for the W.K. Kellogg Foundation for Central America and the Caribbean. Research interests related to knowledge management, innovation, and technology transfer.



Kelvin Cruz

Research assistant in Piazza's Group, brings skills in Raman spectroscopy and chemical vapor deposition. With experience in textile machinery and process optimization, he is expanding his education in engineering at PUCMM, collaborating in R&D projects.