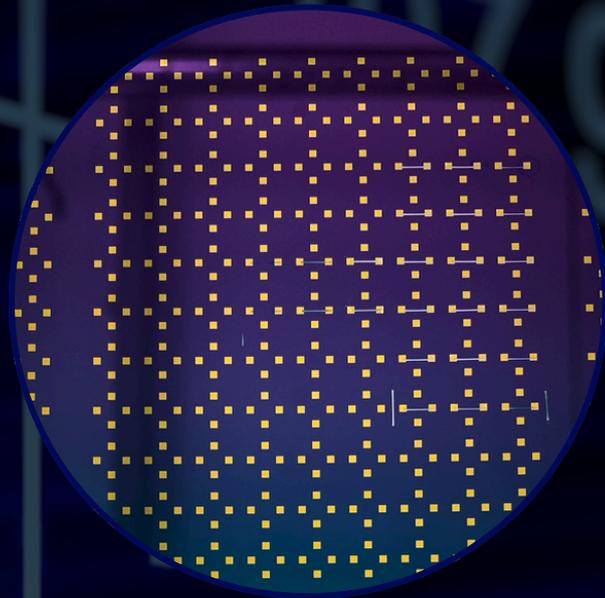


ATLANT 3D



+ PLATINUM DEPOSITION  
WITHOUT REACTANT

DRIVING ADVANCED TECHNOLOGY INNOVATION.  
ATOM BY ATOM.

# + CASE STUDY: INNOVATIVE PLATINUM DEPOSITION WITHOUT REACTANT

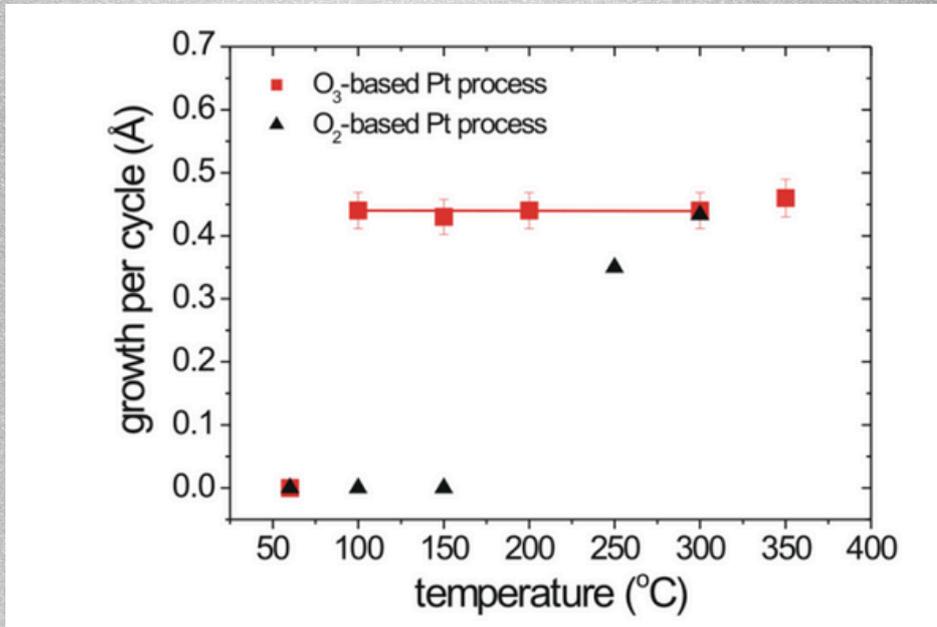


Fig: Growth per cycle as a function of Temperature for the same precursor MeCpPtMe<sub>3</sub> with different reactants.

*J. Phys. Chem. C* 2013, 117, 40, 20557–20561

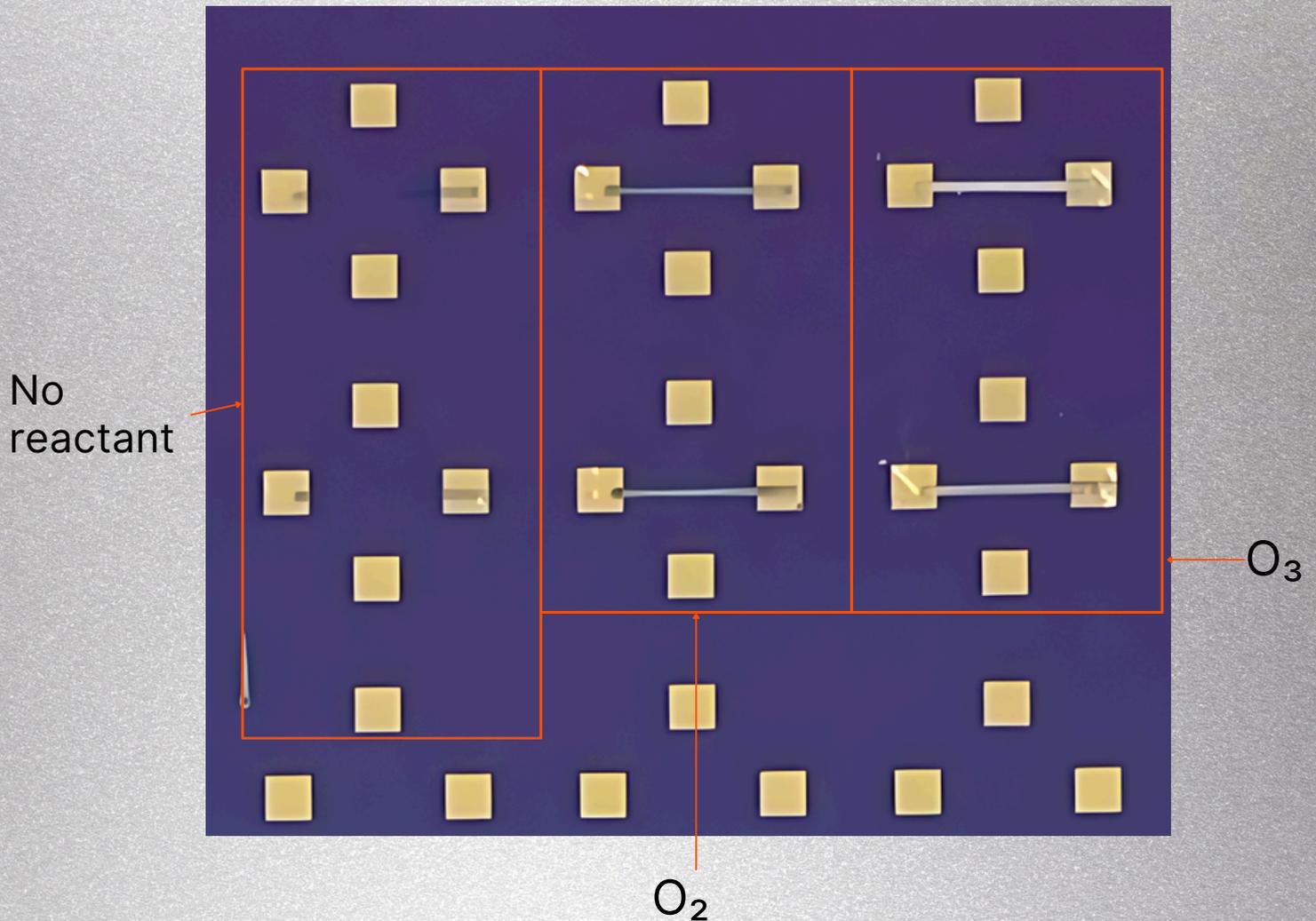
Researching advanced materials in thin films is often time-consuming with conventional deposition systems like CVD, PVD, and ALD. These systems typically cover an entire surface, requiring new samples for each set of parameters (temperature, pressure, gas flows, etc.). Characterizing each sample and starting new depositions for additional data points is tedious, especially considering the lengthy purge or pump-down times required for vacuum systems.

ATLANT 3D conducted an in-house study to test our platinum recipe without a reactant, using pre-patterned samples with electrodes for electrical contacts.

We designed an experiment to deposit three sets of platinum wires:

1. Using Ozone (the usual recipe)
2. Using Oxygen
3. Using no added reactant, just the atmosphere

# + FIRST TEST AT TEMPERATURE 1



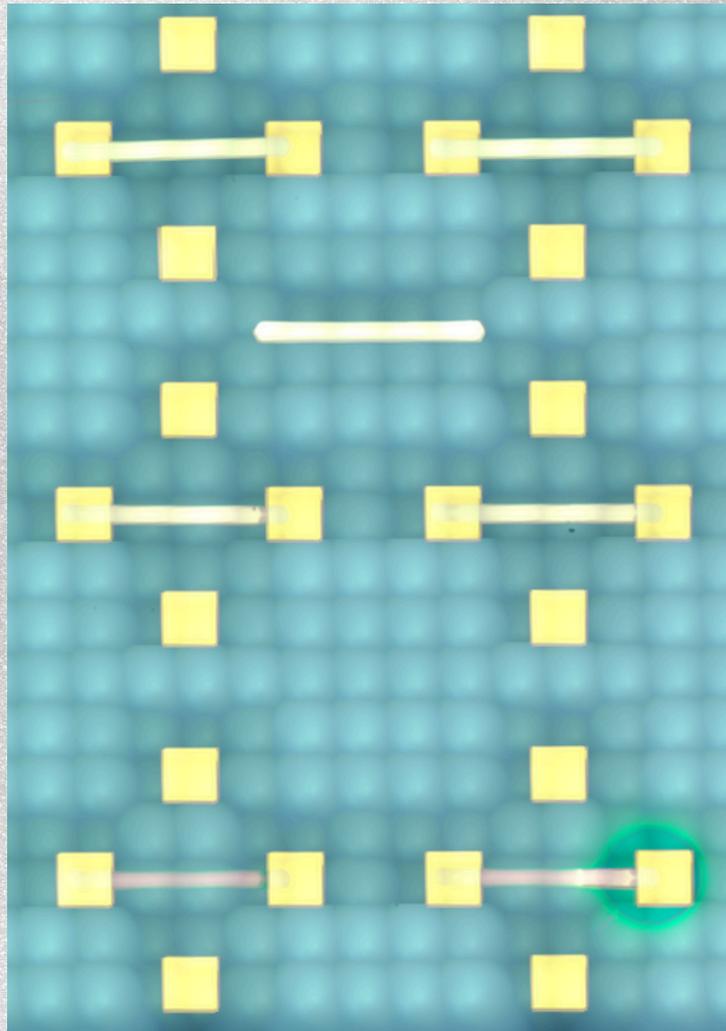
FIRST TEST AT TEMPERATURE 1

The deposition time was only a few minutes, and switching reactants was instant. At a lower temperature, the ozone recipe performed better than oxygen or ambient atmosphere. Knowing higher temperatures impact surface chemistry, we conducted another test at a higher temperature.

## + SECOND TEST AT TEMPERATURE 2



At a higher temperature, platinum deposition without any added reactant was successful and took only minutes. Adjusting the temperature from T1 to T2 was quick.



SECOND TEST AT TEMPERATURE 2

These tests demonstrate the versatility and efficiency of ATLANT 3D technology. Our Nanofabricator allows rapid modification of deposition parameters (reactant component, temperature, gas flows, pressures, etc.), making it ideal for conducting tests that would traditionally take weeks and multiple tools.



ATLANT 3D is at the forefront of innovation in atomic-scale advanced manufacturing. Our mission is to transform the microfabrication landscape with cutting-edge technologies that offer unprecedented precision, flexibility, and efficiency.

## OUR CORE TECHNOLOGY: DALP®

At the heart of our solutions is the proprietary Direct Atomic Layer Processing (DALP®) technology. DALP® allows for direct, precise, and flexible material deposition at the atomic level, making it possible to create highly intricate and reliable microstructures. This technology is a game-changer for industries requiring meticulous thin film fabrication, including microelectronics, photonics, and MEMS/Sensors.

## THE NANOFABRICATOR™ PLATFORM

Our state-of-the-art NANOFABRICATOR™ platform leverages DALP® technology to deliver advanced microfabrication capabilities. This platform is designed to meet the diverse needs of research labs, high-tech development teams, and industry innovators, providing tools for rapid prototyping, precise material deposition, and versatile fabrication processes.

## PARTNERSHIPS AND COLLABORATIONS

At ATLANT 3D, we believe in the power of collaboration. We work closely with academic institutions, industry leaders, and research organizations to push the boundaries of what's possible in microfabrication. Our partnerships are central to our mission of advancing technology and fostering innovation across multiple sectors.

## CONTACT US

To learn more about our groundbreaking technologies and how we can help drive your innovation, please visit our website or contact us directly.



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