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**Nanovision: An Integrated Platform for Two-Dimensional Material
Discovery and Device Assembly**

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Two-dimensional (2D) materials are crucial for enabling next-generation computing, electronics, sensing, and communication technologies. Currently, most breakthroughs in 2D material research rely on atomically thin (few-layer), exfoliated crystals. Frustratingly, identifying candidate crystals typically requires tedious, time-consuming, manual processes performed by trained researchers. This bottleneck severely limits device complexity, fabrication throughput, and overall research efficiency. To address this challenge, we created an integrated hardware and software platform that rapidly and automatically images, identifies, and catalogs exfoliated 2D crystals at full-wafer scales. Our platform enables researchers to visualize and to interact with ultra-high-resolution multimodal images of 2D materials using a web-accessible interface that supports remote operations, promotes data sharing, and enhances researcher productivity. By leveraging artificial intelligence and computer vision strategies, our platform eliminates the need for researchers to engage in tedious visual identification. A working prototype of this platform has helped us to streamline our 2D materials device research while collecting user feedback for continual refinements to our workflow. Moreover, using this platform, we are compiling physical and digital libraries of exfoliated 2D materials with the goal of democratizing access to high-quality materials for researchers. In this presentation, we describe the ongoing development of the hardware, software and control interface used in this impactful materials discovery platform.