DMR-2122067 PREM

PI: D. Kumar, NCAT

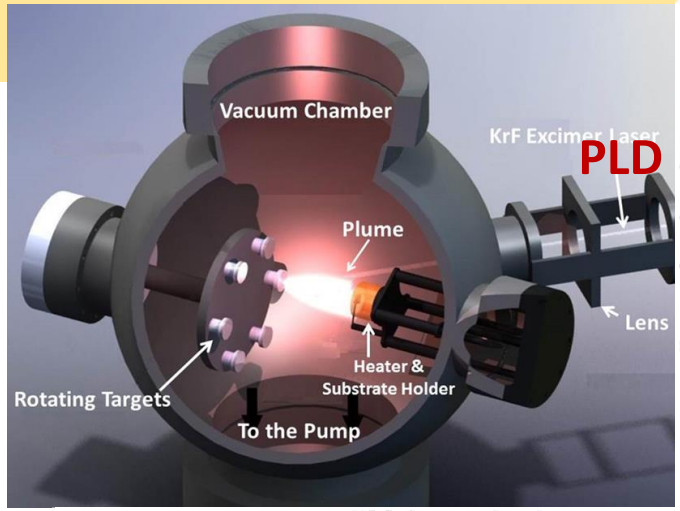
NCAT-Cornell PREM: Collaborative Research and Education in Energy Materials (CREEM)

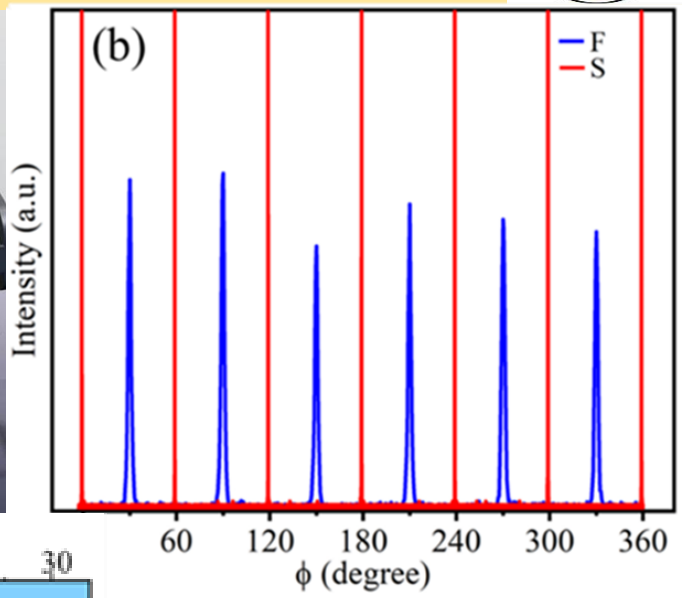
CRERM team is engaged in finding new pathways for

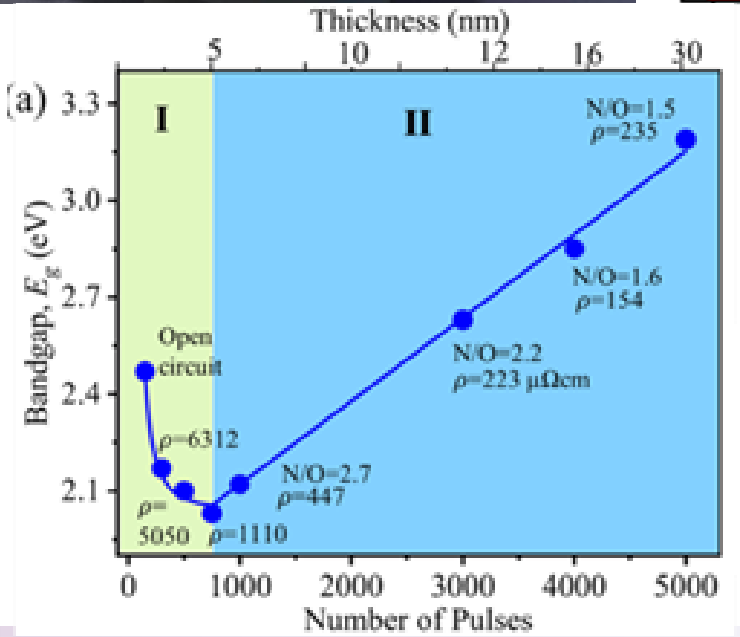
- **H_2-evolution from water splitting**
- **Solar energy harvesting**

NCAT PREM- Cornell MRSEC Team

CREEM Team- Winner of the 2023 NCAT Interdisciplinary Team Award: The award recognizes annually a research project that stretches across the traditional boundaries of academic disciplines. The award involves a plaque and $5000 cash prize.







Synthesis of epitaxial titanium oxynitride thin films by pulsed laser deposition (**PLD**) method with a tunable bandgap

ACS Applied Materials and Interfaces, 15, 4733-4742 (2023).

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Teaching, Training, & Early Engagement in Research: NCAT CREEM's Pathway of Student Recruitment, Retention & Graduation

(Left) PhD Graduates of CREEM (right) Joint teaching of an undergraduate course: Dr. Jin Suntivich (Cornell MRSEC) giving a lecture in a Materials Science class at NCAT, taught by PREM PI, Dr. Kumar

NCAT PREM students and faculty with NSF DMR Director, Dr. Germano S. Iannacchione, and PREM program Directors, Dr. Shadi, and Dr. Majumdar, during PREM Poster Summit in 2023 MRS Spring meeting in San Francisco.

Top row: (left) Tyffani Royal, an ME UG, working a PREM graduate student, (center) NCAT students presenting a posted at the Ohio State University during Across MRSEC-PREM School (Oct 13, 2022), Brooke Smith, an ME UG, presenting a poster during Undergraduate Research Symposium, Spring 2023; Bottom row: (left) NCAT undergraduate students, Madison Jordan, explaining electrical resistivity set-up to a group of TRIO participants, (center): Brooke Smith, and (right) Vanesa jones, working in LABS on the PREM project at Cornell (Spring 2022).

In the summer of 2022, we organized a unique outreach program specifically tailored for incoming freshman students. The program focuses on early recruitment and attracting students from traditionally underserved populations. TRiO workshop participants (1) and their visits to XRD, PLD, and transport measurements Labs (2-5).