

ADVANCED TARGETS

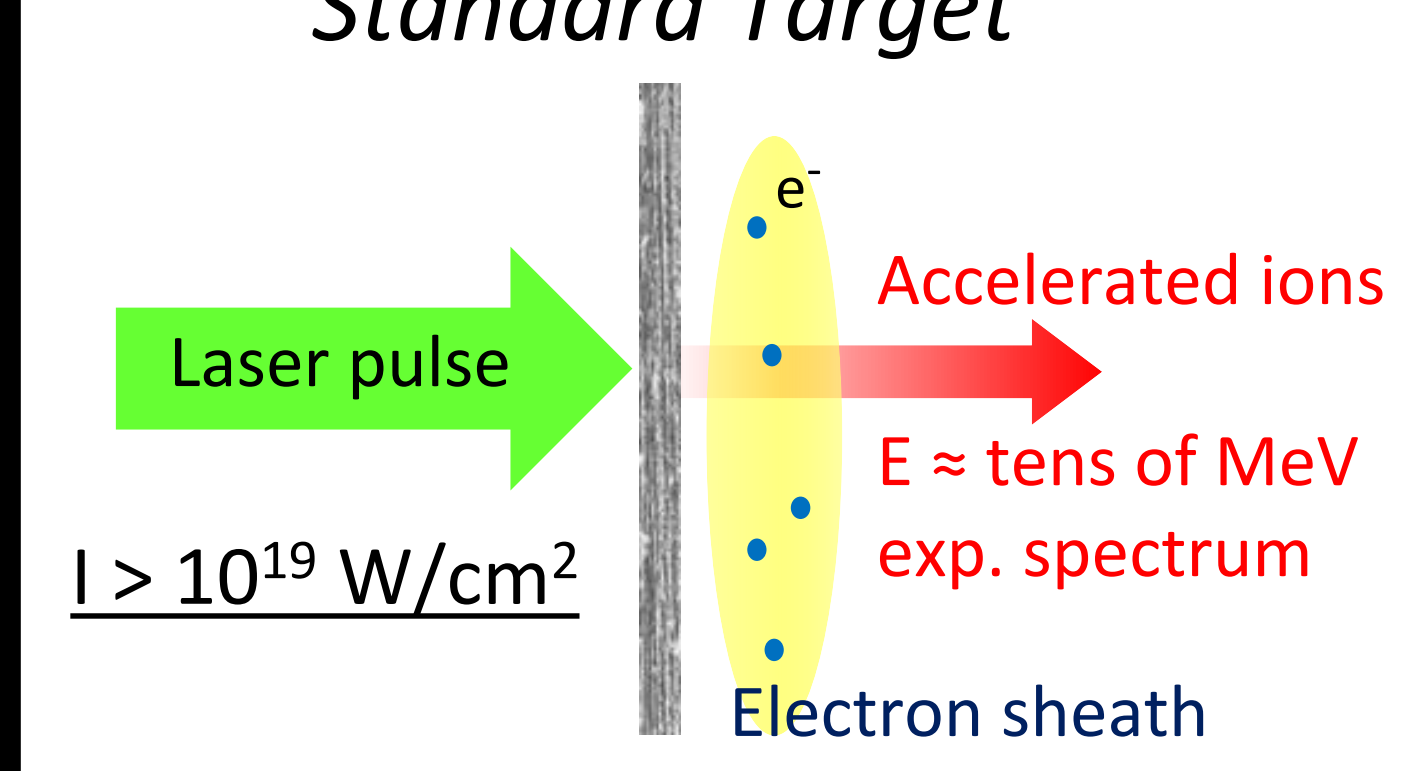
FOR ENHANCED LASER PLASMA ION ACCELERATION

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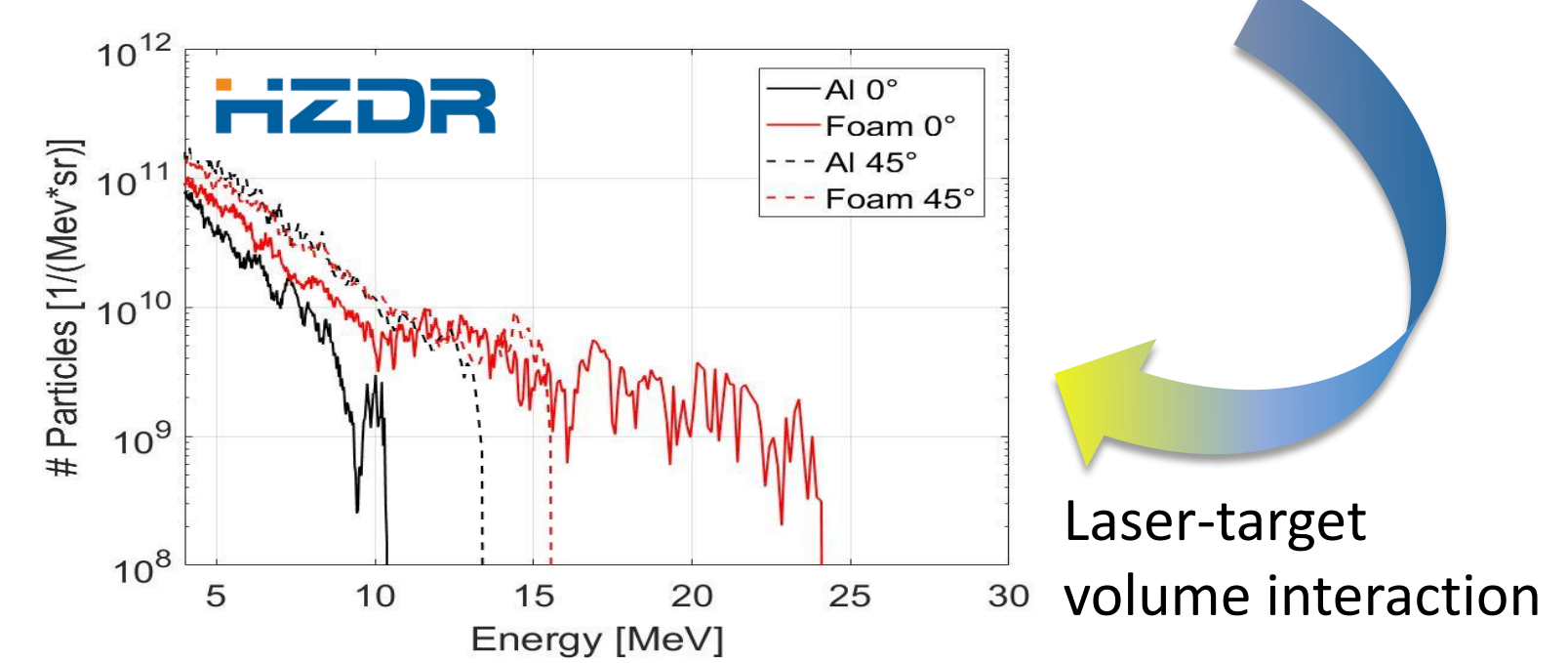
MOTIVATIONS & AIMS

Laser-plasma ion acceleration



Interesting options:

- Microstructured surface targets
- Near-critical (ultra-low) density coatings

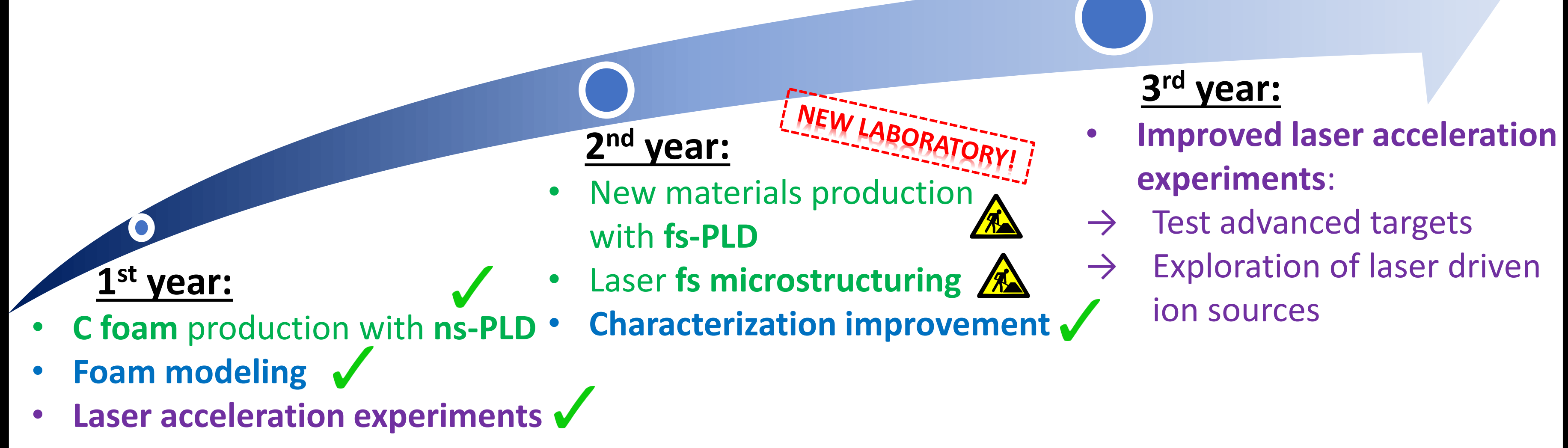


Challenges:

- Target production
- Target optimization
- Materials characterization
- Materials modeling

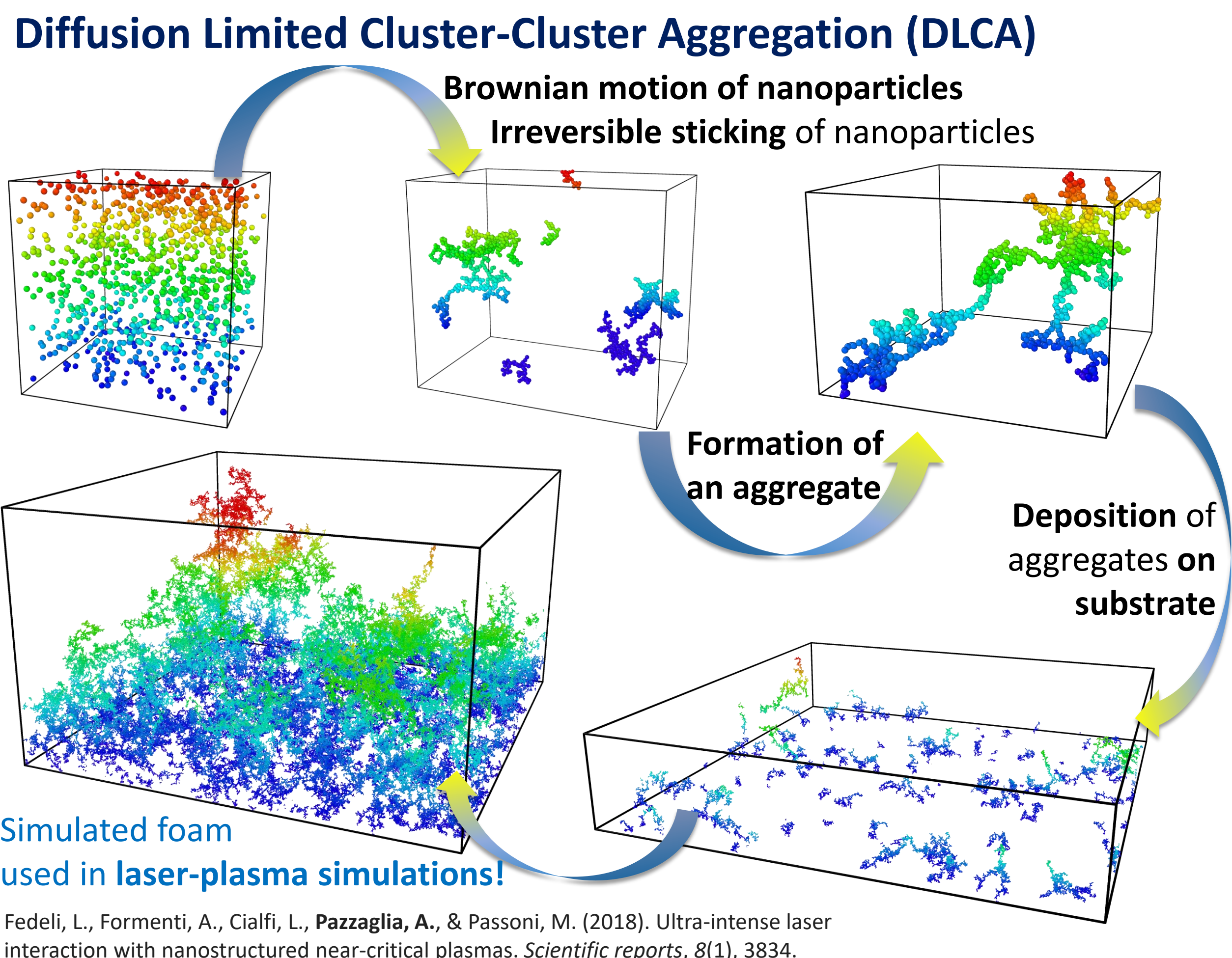
MY PHD PROJECT

PHD PROJECT

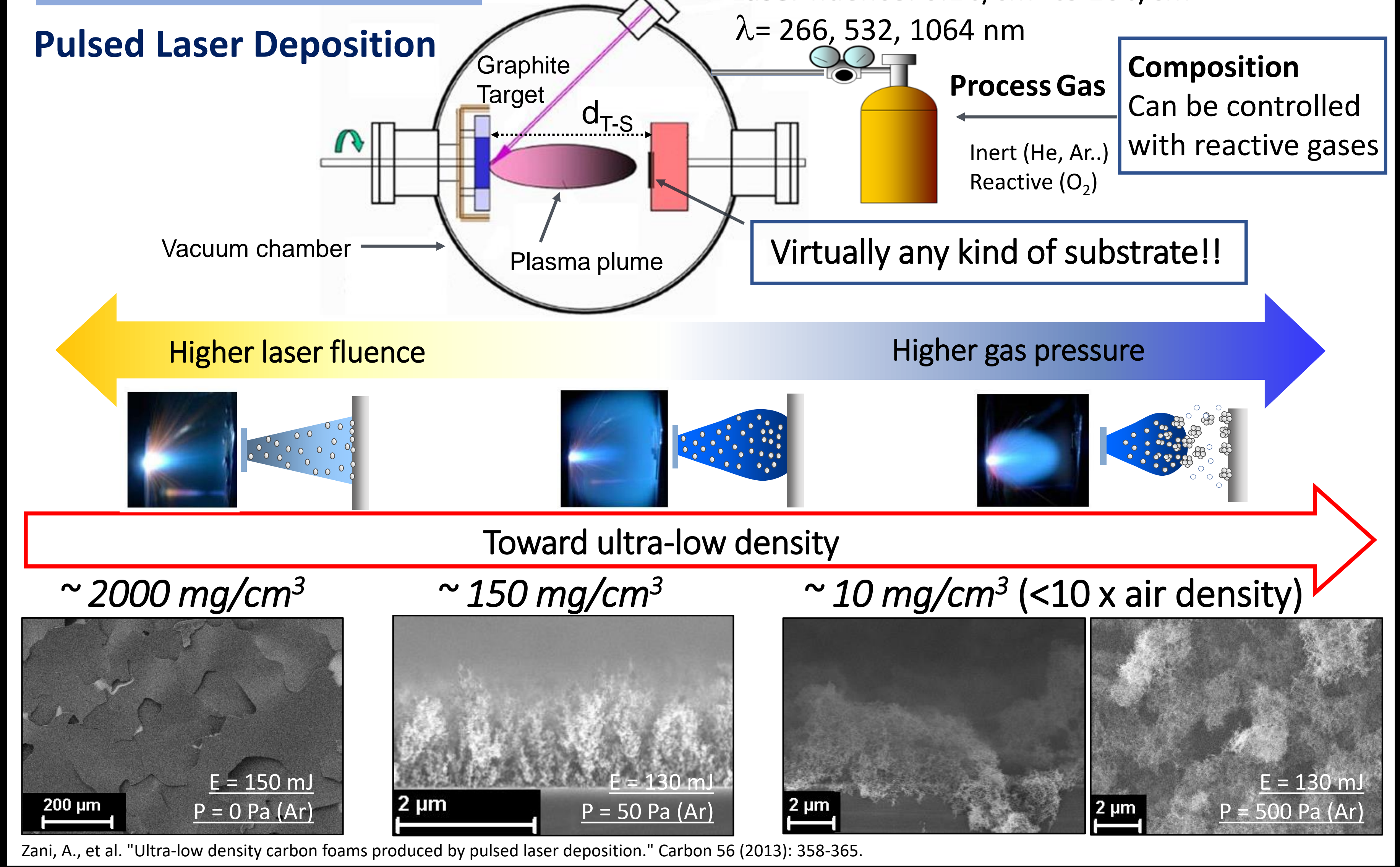


FOAM GROWTH MODELING

Maffiini A. Pazzaglia A., et al., In preparation

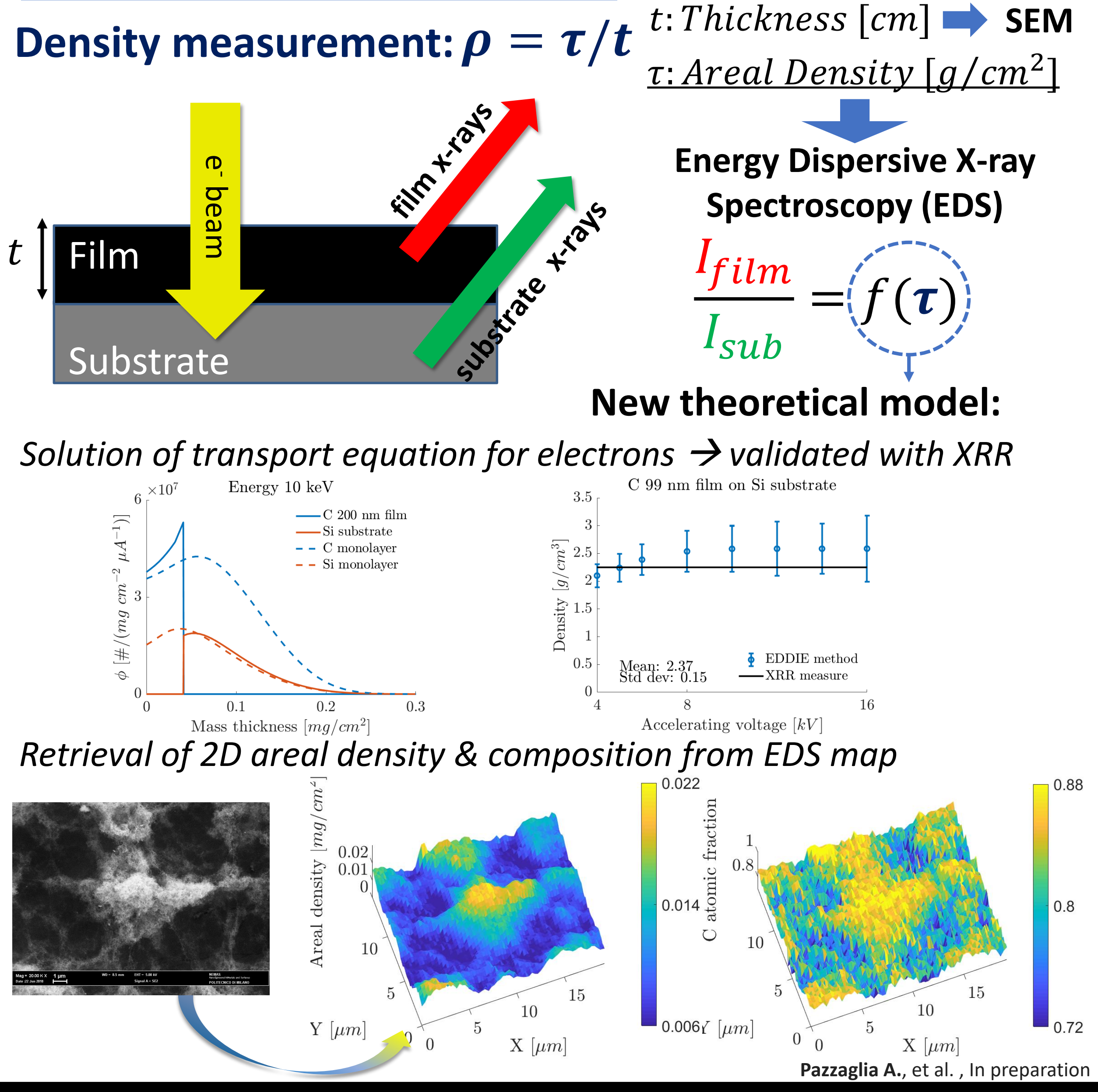


ns-PLD CARBON FOAM



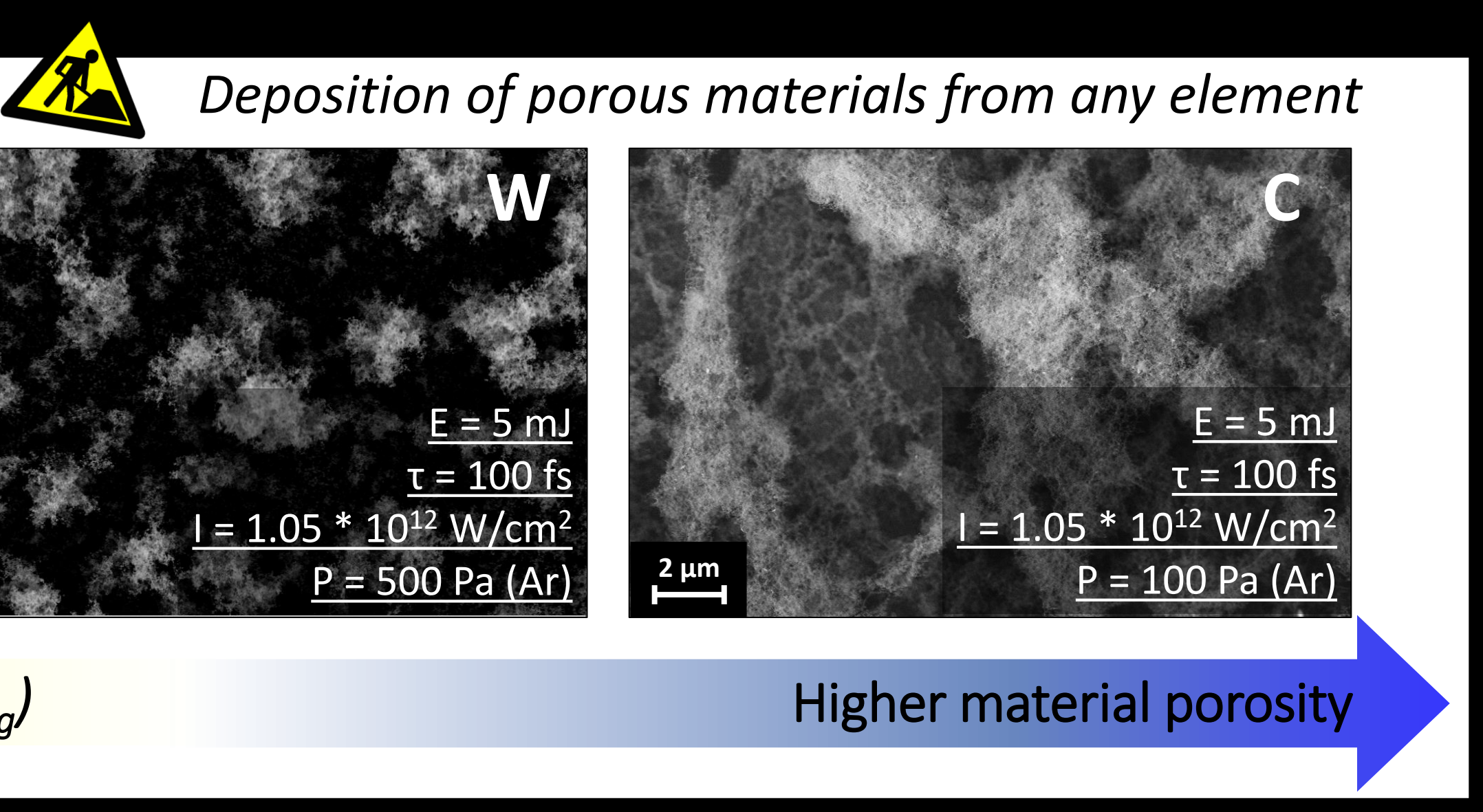
Zani, A., et al. "Ultra-low density carbon foams produced by pulsed laser deposition." Carbon 56 (2013): 358-365.

FOAM CHARACTERIZATION

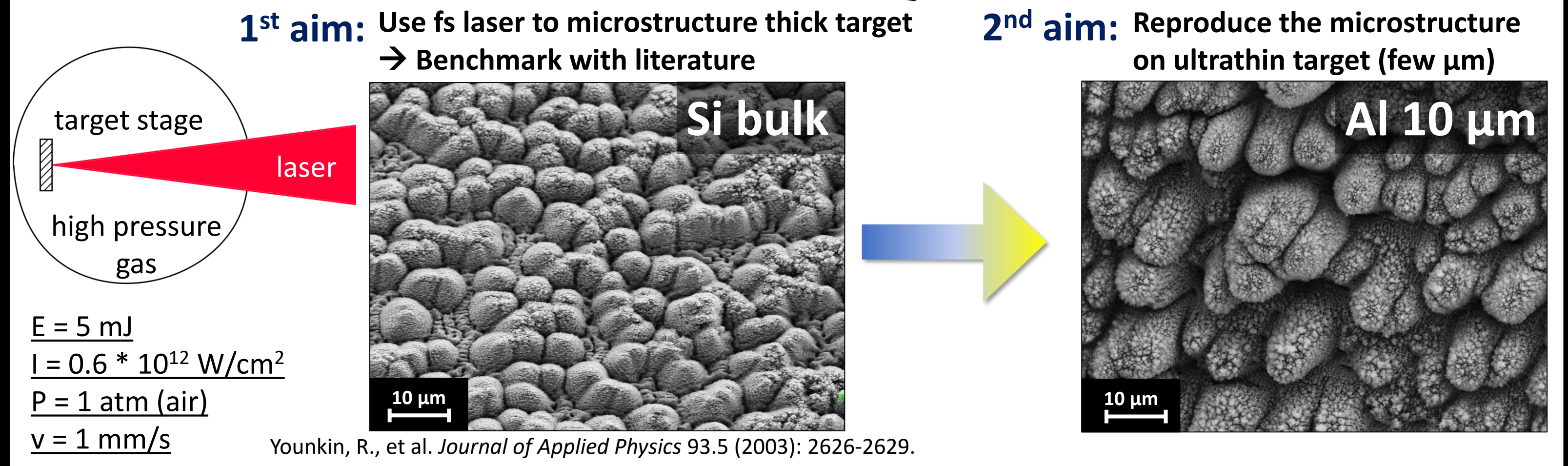


Pazzaglia A., et al., In preparation

fs-PLD POROUS MATERIALS



fs LASER MICROSTRUCTURING



CONCLUSION AND FUTURE PERSPECTIVE

- What I've done:**
- Produced foams with ns&fs PLD
 - Microstructured thin target
 - Simulated the foam aggregation
 - Developed a new EDS method to measure ultra-low densities
 - Used foams in laser acceleration experiments
- What I will do:**
- Explore new capabilities of fs PLD
 - Combine PLD deposition with HiPIMS deposition
 - Perform new laser acceleration experiments:
 - Foam & microstructures
 - Laser driven ion sources