

TCSUH SPECIAL SEMINAR

Chi Thang Nguyen

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Tuesday, July 30, 2024

12:00 p.m. – 1:00 p.m. *Sandwiches provided.*

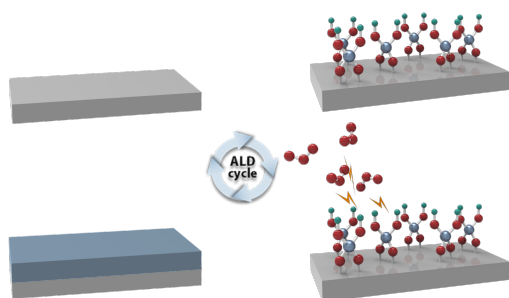
In Person: Houston Science Center (HSC), Room 102

The Era of Atomic Crafting: Atomic Layer Deposition (ALD) and Beyond



ABSTRACT: In recent years, the demand for miniaturization and enhanced performance in various industries has driven the evolution of fabrication approaches from 2D structures to 3D architectures. As nanofabrication is originally based on 2D structures, several challenges arise when migrating to 3D systems. New processing techniques are being developed to address these fabrication challenges.

This presentation will explore Atomic Layer Deposition (ALD), a cutting-edge thin film deposition technique that epitomizes bottom-up fabrication by crafting atoms in a layer-by-layer fashion. ALD is crucial for coating applications across a wide range of industries due to its capability to produce uniform and conformal coatings on complex 3D structures. Additionally, recent advancements in ALD technology, its future prospects, and its potential to address current challenges in materials science and engineering will be discussed.



BRIEF BIOGRAPHY: Dr. Chi Thang Nguyen received his Ph.D. in Materials Science and Engineering from Incheon National University, Korea, in 2022. He is currently a Postdoctoral Appointee in the Applied Materials Division at Argonne National Laboratory, U.S. Department of Energy. Dr. Thang's research interests include atomic layer deposition (ALD) and area-selective deposition (ASD), with applications of ALD/ASD techniques in the fabrication of 2D and 3D nanostructures for various disciplines within the

semiconductor industry, sensor development, materials for extreme environments, bio-applications, multifunctional materials, and more. Additionally, he is interested in the synthesis of nanomaterials and devices for applications in human life, such as reduced-graphene-oxide (rGO) based materials for oil separation, sensors, radiation dosimeters, catalysts, water treatment, ... He specializes in material analysis using techniques such as XPS, XRD, FTIR, SEM/TEM, AFM, QMS, ... In addition to his experimental work, he also conducts theoretical calculations to predict the adsorption capacity of molecules on surfaces and growth of thin films using the Monte Carlo model and Johnson-Mehl-Avrami-Kolmogorov (JMAK) model. **Speaker:** thang.nguyen@anl.gov; **Corresponding:** jelam@anl.gov.

Persons with disabilities who require special accommodations to attend this lecture should call 713-498-9703.