



Abstract Book

The 1st International
Conference on ASEAN
Sustainable Development
(ICASD 2023)

“Research and Social Innovation
for Sustainable Development
Goals: SDGs”

SUSTAINABLE DEVELOPMENT GOALS



20 - 21 July, 2023

At Crystal Hotel, Hatyai, Songkhla, Thailand

Message from Rector of Universitas Nahdlatul Ulama Yogyakarta

Dear Keynote Speakers, Esteemed Participants, and Honorable Delegates, it is with great pleasure and immense pride that I extend my warmest welcome to each and every one of you for the 1st International Conference on ASEAN Sustainable Development (ICAD) 2023 in Thailand. As the Rector of Universitas Nahdlatul Ulama (UNU) Yogyakarta-Indonesia, I am truly honored to co-host this significant event alongside esteemed partners from across the ASEAN region.



Sustainability has emerged as one of the most pressing global challenges of our time. As we navigate a complex landscape of environmental, social, and economic concerns, the role of collaboration and knowledge-sharing becomes increasingly crucial. The ASEAN Sustainable Development Conference serves as a platform to foster meaningful exchanges, innovative ideas, and actionable solutions to address these challenges collectively.

The ASEAN region, known for its rich diversity and dynamic growth, plays a pivotal role in shaping the global sustainability agenda. Through this conference, we aim to harness the collective wisdom and expertise of scholars, researchers, policymakers, industry leaders, and community representatives from across ASEAN countries and beyond. Together, we will explore sustainable development practices, identify areas of potential collaboration, and seek to forge a path toward a more inclusive and resilient future.

UNU Yogyakarta sets its vision to be a leading late-coming NU institution that produces professionals in various strategic fields, nationally and globally. We are also working to solidify our position as a role model for campus development, which utilizes new and creative solutions, leading us to work in more efficient, effective, and productive ways to stay relevant in a rapidly changing world. UNU Yogyakarta realizes that the vision will remain wishful thinking if we attempt to go forth by ourselves. We understand that collaboration is key to the development of any institution through supporting and learning from each other in a mutually beneficial way. Following our vision and mission to become *the professional hub and future-oriented university*, this international conference is one of many efforts to make them come true.

Moreover, we believe this conference provides an excellent opportunity for networking, fostering new partnerships, and strengthening existing collaborations. The vibrant exchange of ideas and experiences will undoubtedly inspire fruitful discussions and catalyze innovative solutions, which can be applied within our respective countries and the broader ASEAN region.

I would like to express my deepest gratitude to the organizing committee, sponsors, and all those who have worked tirelessly behind the scenes to make this conference a reality. Your dedication, enthusiasm, and unwavering commitment to sustainability have ensured the success of this event. Once again, I extend my warmest welcome to all of you, and I wish you a fruitful and memorable experience at the 1st International Conference on ASEAN Sustainable Development.

Warmest regards,

A handwritten signature in blue ink, which appears to read "Widya Priyahita Pudjibudojo". The signature is written in a cursive style and is positioned above the printed name of the Rector.

Widya Priyahita Pudjibudojo
Rector of Universitas Nahdlatul Ulama Yogyakarta

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Possible Values of Lattice Constant of Silicene Growth on Substrate: Density Functional Calculations

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Abstract: This study conducted calculations using First-Principles based on Density Functional Theory to determine the stability of monolayer silicene. A quasi-freestanding of monolayer silicene was applied as a model during calculations. We investigated the total energy and the atomic configuration with variations of lattice constant. We analyzed that a silicene monolayer in a freestanding state will never synthesize. Silicene merely synthesized only on the top of the substrate. We found some possible values of the lattice constants of monolayer silicene on the substrate, especially in recent experiments, which is silicene on the top of Au[111]. We also investigate the electronic structure of silicene with some variations of lattice constant. We assumed strain engineering could be truly applied in silicene, particularly in all group IV monolayers. This opportunity opens the possibility of silicene for using topological quantum computing.

Keywords: Calculation, monolayer, silicene, substrate, strain