Nicholas Domingo Ignacio

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**Research Interests**

* Integration of 2D materials in PCM and RRAM for neuromorphic computing
* Crystalline-crystalline phase transformations for multilevel PCM.
* Electronic transport in low dimensional material devices
* Scanning transmission electron microscopy and scanning tunnelling microscopy (STM superuser at TMI)
* Materials science pedagogy

**Education**

**08/2021 – current:** Ph.D. Candidate (advisor Prof. Deji Akinwande) Materials Science and Engineering Program and Texas Materials Institute, University of Texas at Austin, Austin, USA

**01/2020 – 06/2020:** Visiting Student through Materials Exchange Program, University of Oxford, Oxford, UK

**08/2017 – 06/2021:** S.B. Materials Science and Engineering, Massachusetts Institute of Technology, Cambridge, USA

**Awards, Honors & Certificates**

**09/2023:** Science Graduate Student Research (SCGSR) Fellow, U.S. Department of Energy, hosted by Oak Ridge National Lab, CNMS

**06/2023:** Inclusive Classrooms Leadership, Division of Diversity and Community Engagement, University of Texas at Austin

**02/2023:** K-12 Outreach Certificate, CDCM MRSEC, University of Texas at Austin

**12/2022:** Professional Development Award, University of Texas at Austin

**08/2021:** Virginia and Ernest Cockrell, Jr. Fellow, University of Texas at Austin

**08/2021:** T. W. Whaley, Jr. Scholarship, University of Texas at Austin

**Professional Activities**

**Publications**

**In Preparation:** M. Floto\*, **N. D. Ignacio**\*, R. Ciufo, D. Akinwande, C.B. Mullins, Hydrogen-Induced Surface Reconstruction of Co(poly) Studied by STM

**Prepress:** Y. Lee, Y. Hunag, Y.-F. Chang, S. J. Yang, **N.D. Ignacio**,S. Kutagulla, S. Mohan, S. Kim, J. Lee, D. Akinwande, S. Kim, Programmable Retention Characteristics in MoS2-Based Atomirsotrs for Neuromorphic and Reservoir computing Systems, *ACS Nano* (2024)**In Review**

**2024:** J. Xie, Md. Patoary, R. Laskar, Md. A. Rahman Laskar, **N. D**. **Ignacio**, X. Zhan, U. Celano, D. Akinwande, I. Sanchez Esqueda, Quantum conductance in vertical hexagonal boron nitride memristors with graphene-edge contacts, *ACS Nano Lett.* (2024)

**2023: N. D. Ignacio**, J. Fatheema, Y. Jeon, D. Akinwande, Air-stable atomically encapsulated crystalline-crystalline phase transitions in In2Se3, *Adv Elec Matr* (2023)

S. Mohan, D. Kireev, S. Kutagulla, **N.D. Ignacio**, Y. Gu, H. Celio, X. Zun, D. Akinwande, K. Liechti, Direct, Metal-free Growth and Dry Separation of Bilayer Graphene on Sapphire: Implications for Electronic Applications, *ACS Appl. Nano Mater* (2023)

Y. Huang\*, Y. Gu\*, S. Mohan, A. Dolocan, **N. D. Ignacio**, S. Kutagulla, K. Matthews, A. Londoño-Calderon, Y.-F Chang, Y.-C. Chen, J. Warner, M.T. Pettes, J.C. Lee, D. Akinwande, Reliability improvement and effective switching model of thin-film MoS2  memristors**,** *Adv Funct Mater* (2023)

***\**** *Denotes equal contribution*

**Conferences**

Posters

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| **11/2022:** | **“Control of Crystalline-Crystalline Phase Changes in In2Se3 by**  **Encapsulation”,** Materials Research Society (MRS) Fall 2022 Meeting, (Boston, Ma, USA) |

**06/2022: “Hydrogen-Induced Surface Reconstruction of Co(poly) Studied by STM”,** 82nd PEC Meeting 2022, (Chicago, IL, USA)

**Member**

Materials Research Society (MRS)

American Physics Society (APS)

**Teaching Experience**

Introduction to Astronomy (AST301), Department of Astronomy, University of Texas at Austin (Spring 2023)

Materials Engineering (ME334), Department of Mechanical Engineering, University of Texas at Austin (Summer 2022)

Introduction to Solid-State Chemistry (3.091), Department of Materials Science and Engineering, MIT, (Fall 2019)

**Service & Outreach**

**Reviewer for:** ACS Nano, Journal of Emerging Investigators

**(2023 – current)**

**08/2023 – current:** UT Austin Graduate Engineering Council Materials Science representative

**08/2023 – current:** UT Austin Graduate Student Assembly Materials Science representative

**09/2022 – 09/2023:** Cockrell School of Engineering DEI board member

**02/2022 – current:** K-12 STEM outreach through UT MRSEC in local elementary schools

**08/2021 – current:** MIT Education Councilor (Interview prospective undergraduates)

**08/2020 – 06/2022:** MIT First year associate advisor

**08/2020 – 06/2022:** MIT Undergraduate associate advising steering committee member

**06/2020 – 06/2022:** Department Representative on DEI board of MIT Undergraduate Association

**08/2020 – 06/2021:** Vice President of Society of Undergraduate Materials Scientists at MIT

**08/2018 – 08/2021:** Department of Materials Science Freshmen Pre-orientation program mentor and coordinator

**References**

**Dr. Deji Akinwande**

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