

# Nicholas J. Corrente, PhD

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## APPOINTMENTS

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**Teaching Instructor: Rutgers University** – New Brunswick, NJ, USA Fall 2024 - Present  
**Lecturer: Rutgers University** – New Brunswick, NJ, USA Summer 2022 - Summer 2024

## EDUCATION

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**Rutgers University** – New Brunswick, NJ, USA  
PhD Candidate – Chemical and Biochemical Engineering, Advisor: Alexander V. Neimark December 2024  
Master of Science – Chemical Engineering May 2023

**New Jersey Institute of Technology** – Newark, NJ, USA  
Bachelor of Science – Chemical Engineering May 2019

**Seton Hall University** – South Orange, NJ, USA  
Bachelor of Science – Chemistry August 2016

## AWARDS

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### Teaching

2023-2024 Rutgers University CBE Outstanding Faculty Award Spring 2024  
2023-2024 Rutgers University EGC Professor of the Year Award Spring 2024  
2022-2023 Rutgers University EGC Professor of the Year Award Spring 2023  
2023 Rutgers University CBE Teaching Assistant Award Spring 2023

### Research

2023-2024 Rutgers University CBE-GSO Researcher-Scholar Award Spring 2024  
Rutgers University Department of Chemical and Biochemical Engineering Venkat Fellowship Fall 2023 - Spring 2024  
CPM-9 First Place Best Poster Award Spring 2024  
2023 Rutgers University SGS Travel Grant Spring 2023  
2022 DOE/NSF Travel Grant Spring 2022  
2022 Rutgers University SGS Travel Grant Spring 2022  
2021 International Adsorption Society Best Poster Award Fall 2021  
2020 International Adsorption Society Travel Grant Spring 2020

## TEACHING EXPERIENCE

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**Teaching Instructor: Rutgers University** – New Brunswick, NJ, USA  
(14:155:201) Chemical Engineering Material and Energy Balances Fall 2024  
Responsibilities: Developing and delivering course curriculum.

(14:440:101) Introduction to Data-Driven Design for Engineering Applications Fall 2024  
Responsibilities: Primary CBE lecturer and point of contact

**Lecturer: Rutgers University** – New Brunswick, NJ, USA  
(14:155:208) Chemical Engineering Thermodynamics I Spring 2024, Summer 2024  
(14:155:201) Chemical Engineering Material and Energy Balances Fall 2023, Summer 2024  
Responsibilities: Developing and delivering course curriculum.

**Instructor: Rutgers University** – New Brunswick, NJ, USA  
(14:155:208) Chemical Engineering Thermodynamics I Spring/Summer 2023, Summer 2022  
Responsibilities: Developing and delivering course curriculum.

**Guest Lecturer: New Jersey Institute of Technology** – Newark, NJ, USA Spring 2021  
Course: Python Programming for Chemical Engineers  
Responsibilities: Delivered one lecture on python for thermodynamic calculations.

**Teaching Assistant: Rutgers University** – New Brunswick, NJ, USA

Courses:

- (16:155:511) Advanced Chemical Engineering Thermodynamics – Fall 2022
- (14:155:208) Chemical Engineering Thermodynamics I – Spring 2021
- (14:155:307) Computational Methods in Chemical Engineering – Fall 2020

## RESEARCH EXPERIENCE

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### PhD Candidate

Fall 2019 - Fall 2024

Department of Chemical and Biochemical Engineering– Rutgers University  
*Coupling Structural, Adsorption, and Mechanical Properties of Nanoporous Carbons Using Advanced Molecular Simulation Methods*  
Advisor: Prof. Alexander V. Neimark

### NSF INTERN

September 2021 - August 2023

ExxonMobil Technology and Engineering Company – Annandale, NJ, USA  
Advisor: Dr. Peter I. Ravikovitch

### Provost Summer Research Fellowship

Summer 2018

New Jersey Institute of Technology

### Undergraduate Research Assistant

January 2018 - August 2019

Computational Laboratory for Porous Materials – New Jersey Institute of Technology  
Advisor: Prof. Gennady Y. Gor

## PUBLICATIONS

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**N.J. Corrente**, A.V. Neimark (2024). From Slit Pores to 3D Frameworks: Advances in Molecular Modeling of Adsorption in Nanoporous Carbons. Submitted to **Adv Colloid Interface Sci**.

**N.J. Corrente**, S. Parashar, R. Gough, E.L. Hinks, P.I. Ravikovitch, A.V. Neimark (2024). Modeling Structural Flexibility in 3D Carbon Models: A Hybrid MC/MD Approach to Adsorption-Induced Deformation. Submitted to *Carbon*. Preprint available on ChemRxiv. DOI: 10.26434/chemrxiv-2024-hd20d

A.V. Neimark, **N.J. Corrente**, F.X. Coudert (2024). Phase Transformations in MOFs Induced by Adsorbate Exchange. Submitted to *Langmuir*. Preprint available on ChemRxiv. DOI: 10.26434/chemrxiv-2024-s96xk

S. Parashar, **N.J. Corrente**, A.V. Neimark (2024). Unveiling Non-Monotonic Deformation of Flexible MOFs during Gas Adsorption: From Contraction and Softening to Expansion and Hardening. Submitted to *J. Colloid Interface Sci*. Preprint available on ChemRxiv. DOI: 10.26434/chemrxiv-2024-m5wkv-v2

P. Kowalczyk, S. Furmaniak, A.P. Terzyk, **N.J. Corrente** A.V. Neimark (2024). Surface Area and Porosity Analysis in Nanoporous Carbons by Atomistic Pore Domain Model. *Carbon*. DOI: 10.1016/j.carbon.2024.119510

**N.J. Corrente**, E.L. Hinks, A. Kasera, J. Liu, A.V. Neimark (2024). Deformation of Nanoporous Carbons Induced By Multicomponent Adsorption: Insight from the SAFT-DFT Model. *J Phys Chem C*. Selected cover article. DOI: 10.1021/acs.jpcc.4c00833

F. Vallejos-Burgos, C. de Tomas, **N.J. Corrente**, K. Urita, S. Wang, C. Urita, I. Moriguchi, I. Suarez-Martinez, N. Marks, M.H. Krohn, R. Kukobat, A.V. Neimark, Y. Gogotsi, K. Kaneko (2023). 3D Nanostructure Prediction of Porous Carbons via Gas Adsorption. *Carbon*, 215, 11843. DOI: 10.1016/j.carbon.2023.118431

**N.J. Corrente**, E.L. Hinks, A. Kasera, P.I. Ravikovitch, A.V. Neimark (2022). Modeling Adsorption of Simple Fluids and Hydrocarbons on Nanoporous Carbons. *Carbon*, 197, 526-533. DOI: 10.1016/j.carbon.2022.06.071

**N.J. Corrente**, K. Zarębska, A.V. Neimark (2021). Deformation of Nanoporous Materials in the Process of Binary Adsorption: Methane Displacement by Carbon Dioxide from Coal. *J Phys Chem C*, 125(38), 21310-21316. DOI: 10.1021/acs.jpcc.1c07363

**N.J. Corrente**, C. D. Dobrzanski, G. Y. Gor (2020). Compressibility of Supercritical Methane in Nanopores: A Molecular Simulation Study. *Energy Fuels*, 34(2), 1506-1513. DOI: 10.1021/acs.energyfuels.9b03592

C. D. Dobrzanski, **N. J. Corrente**, G. Y. Gor (2020). Compressibility of Simple Fluid in Cylindrical Confinement: Molecular Simulation and Equation of State Modeling. *Ind Eng Chem Res*, 59(17), 8393-8402. DOI: 10.1021/acs.iecr.0c00693

## INVITED TALKS

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**N.J. Corrente**, E.L. Hinks, A. Kasera, R. Gough, A.V. Neimark. *Applications of 3D Amorphous Carbon Molecular Models for Adsorption and Mechanical Property Predictions*. New Jersey Institute of Technology – 12 April 2024. Newark, NJ.

**N.J. Corrente**, K. Zarębska, A.V. Neimark. *Deformation of Nanoporous Materials in the Process of Binary Adsorption*. 2nd Annual International Adsorption Society Webinar Series – 17 August 2021.

## PRESENTATIONS

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**N.J. Corrente**, S. Parashar, R. Gough, E.L. Hinks, A.V. Neimark. Coupling Adsorption and Mechanical Properties of Nanoporous Carbon Using 3D Molecular Models. 2024 AIChE Annual Meeting – 30 October 2024. San Diego, CA.

**N.J. Corrente**, E.L. Hinks, A. Kasera, R. Gough, P.I. Ravikovitch, A.V. Neimark. *Applications of 3D Amorphous Carbon Molecular Models for Adsorption and Mechanical Property Predictions*. CPM-9 – 21 May 2024. Delray Beach, FL.

**N.J. Corrente**, E.L. Hinks, A. Kasera, R. Gough, P.I. Ravikovitch, A.V. Neimark. *Adsorption-Induced Deformation of Nanoporous Carbons with Mixtures: A Hybrid MC/MD Approach*. 2023 AIChE Annual Meeting – 9 November 2023. Orlando, FL.

**N.J. Corrente**, A.V. Neimark. *Deformation of Nanoporous Carbons Induced By Multicomponent Adsorption: Insight from the SAFT-DFT Model*. 2022 AIChE Annual Meeting – 17 November 2022. Phoenix, AZ.

**N.J. Corrente**, E.L. Hinks, A. Kasera, R. Gough, A.V. Neimark. *Deformation of Nanoporous Carbons in the Process of Binary Adsorption*. 2022 Fundamentals of Adsorption 14th International Conference – 26 May 2022. Boulder, CO.

**N.J. Corrente**, E.L. Hinks, A. Kasera, R. Gough, A.V. Neimark. *Deformation of Amorphous Carbons in the Process of Binary Adsorption*. Otto H. York Department of Chemical and Materials Engineering 3rd Molecular Simulations Workshop – 13 May 2022. NJIT, University Heights, Newark, NJ.

**N.J. Corrente**, E.L. Hinks, A. Kasera, P.I. Ravikovitch, A.V. Neimark. *Modeling Hydrocarbons Adsorption in Amorphous Nanoporous Carbonaceous Materials*. 2021 AIChE Annual Meeting – 10 November 2021. Boston, MA.

**N.J. Corrente**, E.L. Hinks, A.V. Neimark. *Deformation of Amorphous Nanoporous Carbons in the Process of Methane Displacement By Carbon Dioxide*. 2021 AIChE Annual Meeting – 9 November 2021. Boston, MA.

## SERVICE TO RUTGERS UNIVERSITY

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|   |                |
|---|----------------|
| Director: CBE ALChemE 3D Lab  | 2024 - Present |
| Social Media Director: Rutgers University CBE CBE Undergraduate Awards Committee              | Spring 2024    |
| Organizer: CBE PhD Panel Series   | 2024 - Present |
| Faculty Advisor: American Institute of Chemical Engineers Student Chapter, Rutgers University | 2023 - Present |
| Rutgers University Aresty Research Mentor   | 2022 - Present |
| Rutgers University J.J. Slade Scholars Research Mentor  | 2022 - 2023    |
| Rutgers University REU Research Mentor  | Summer 2021    |

## SERVICE TO THE PROFESSION

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| Member: International Adsorption Society Education Committee   | 2021 - Present |
| <ul style="list-style-type: none"><li>Responsible for scheduling and moderating monthly webinar series.</li></ul>  |                |
| Member: AIChE Area 2E  | 2021 - Present |
| Session Chair / Co-Chair for AIChE Area 2E molecular modeling sessions   | 2020 - Present |
| Secretary / Website Developer: 9th Characterization of Porous Materials Workshop   | 2019 - Present |
| <ul style="list-style-type: none"><li>Responsible for coordination of logistics, abstract submissions, and dissemination of information for the upcoming international conference.</li></ul> |                |
| Member: Omega Chi Epsilon Eta Chapter  | 2019 - Present |

## SERVICE TO THE COMMUNITY

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| Team Leader: Pursells Pack, New Jersey Pancreatic Cancer Action Network            | 2013 - Present |
| Lead Advisor: Venture Crew 890, Patriots' Path Council, Boy Scouts of America      | 2015 - Present |
| Eagle Scout Advisor: Troop 72, Patriots' Path Council, Boy Scouts of America       | 2018 - Present |
| Publicity Chair: Fishawack District, Patriots' Path Council, Boy Scouts of America | 2017 - 2019    |