# KUTAY BERK SEZGINEL

University of Pittsburgh, Pittsburgh, PA

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https://kutaybs.com/

**OBJECTIVE**

Strong analytical thinker with good problem solving and presentation skills. Seeking to apply a thorough understanding of advanced mathematical concepts and extensive programming experience in the position of a Data Scientist. Currently finishing up PhD in computational materials science and looking to find an innovative and team-oriented workplace.

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| **EDUCATION** | |  |
| ***PhD candidate in Chemical & Petroleum Engineering*** | Sep 2015 – January 2020 | |
| University of Pittsburgh, Swanson School of Engineering | Pittsburgh, PA | |
| Dissertation Title: “*Computational materials design for molecular machinery: From nanoporous crystals to nanoscale racecars*” | Adviser: Dr. Christopher E. Wilmer | | |

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| ***Master of Science in Chemical & Biological Engineering*** | Sep 2013 – June 2015 |
| Koc University, Graduate School of Science and Engineering | Istanbul, Turkey |

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| ***Bachelor of Science in Chemical & Biological Engineering*** | Sep 2008 – June 2013 |
| Koc University, School of Engineering, *Energy and Environmental Engineering Track* | Istanbul, Turkey |

## PROFESSIONAL EXPERIENCE

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| ***Computational Engineering Fellow*** | Jan 2019 – May 2019 |
| NuMat Technologies, Inc. | Skokie, IL |

* Development of a proprietary Python library for computational materials design. Automation and simplification of various molecular simulations tools and integration with high-performance cloud computing (AWS). Creating a workflow to perform reproducible and trackable experiments. Using the tools developed, research was performed to discover next generation candidate materials.
* Design and 3D printing of a custom part to improve speed and decrease material loss during production.
* Process controller development (hardware and software) with a web interface.

## RESEARCH EXPERIENCE

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| ***Graduate Research Assistant*** | Sep 2015 – January 2020 |
| Hypothetical Materials Lab (WilmerLab), University of Pittsburgh | Pittsburgh, PA |

* Computational method development for functional materials design including materials such as metal-organic frameworks, supramolecular cages, and artificial molecular machines. Performing molecular simulations using high-performance computing and data analysis using available and self-developed Python libraries.
* Organization of world’s first computational nanocar race: Formula Nano.
* Recreation of the lab website ([wilmerlab.com](https://kutaybs.com/)) on GitHub and maintenance as web administrator.

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| ***Graduate Research Assistant*** | Sep 2013 – June 2015 |
| Nanomaterials, Energy and Molecular Modelling Research Group, Koc University | Istanbul, Turkey |

* High-throughput screening of porous materials (MOFs) for gas storage and separation applications using molecular simulations. First lab member to automate many in-house computational procedures.
* Investigated the structural and thermodynamic properties of MOFs to understand methane adsorption mechanism and constructed models to predict natural gas storage of MOFs at various conditions.

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| ***Graduate Research Assistant*** | Sep 2013 – June 2015 |
| Koc University Tupras Energy Center (KUTEM) | Istanbul, Turkey |

* Post-synthetic modifications of porous materials using ionic liquids to improve gas storage/selectivity performances. Characterization by TGA, XRD, FT-IR, surface area and gas adsorption measurements.

## PUBLICATIONS

## Gulsoy, Z., Sezginel, K. B., Uzun A., Keskin S., and Yildirim R. (2019). Analysis of CH4 uptake over MOFs using data mining tools. *ACS Combinatorial Science*. (featured on the front cover)

## Sezginel, K. B., Asinger P., Babaei H., and Wilmer C.E. (2018). Thermal transport in interpenetrated metal–organic frameworks. *Chemistry of Materials*. (featured on the front cover)

## Sezginel, K.B., Feng T., Wilmer, C.E. (2017). Discovery of hypothetical hetero-interpenetrated MOFs with arbitrarily dissimilar topologies and unit cell shapes. *CrystEngComm*. (featured on the front cover)

## Sezginel, K. B., Keskin, S., & Uzun, A. (2016). Tuning the gas separation performance of CuBTC by ionic liquid incorporation. *Langmuir*.

## Basdogan, Y., Sezginel, K. B., & Keskin, S. (2015). Identifying highly selective metal organic frameworks for CH4/H2 separations using computational tools. *Industrial & Engineering Chemistry Research*.

## Sezginel, K. B., Uzun, A., & Keskin, S. (2015). Multivariable linear models of structural parameters to predict methane uptake in metal–organic frameworks. *Chemical Engineering Science*.

## CONFERENCE PRESENTATIONS (ORAL)

## American Chemical Society Meeting, Spring 2019 (Orlando, FL)

## American Institute of Chemical Engineers Annual Meeting 2014, 2016, 2018 (USA)

## MOF Conference 2018 (Auckland, New Zealand)

## Simulators Meeting 2016, 2018 (Pittsburgh, USA)

## Midwest Thermodynamics and Statistical Mechanics Conference 2018 (Pittsburgh, USA)

## NanoTR 2014 (Istanbul, Turkey)

## HONORS & AWARDS

## Molecular Sciences and Software Institute (MolSSI) Fellow (2018 Phase I)

## Startup Blitz Pitch Competition, First Place, University of Pittsburgh ($1500 prize)

## Best Graduate Paper Award (Summer `17), Chemical Engineering Department, University of Pittsburgh

## Innocentive challenge entitled *Chemical Sorbents for Fixed Bed Mercury (Hg0) Control* ($5000 prize)

## Full Merit Scholarship – University of Pittsburgh PhD & Koc University, BS and MS

## Best Chemical and Biological Engineering Senior Project Award (Biodiesel Production from Algae Oil)

## Carnegie Library of Pittsburgh STACKS featured musician (<https://stacks.carnegielibrary.org/artists/kbs>)

## SKILLS

***Language*       Turkish (Native),** English (Advanced), Dutch (Beginner)

***Software***

***Development*** Python (Advanced), JavaScript (Advanced), HTML (Intermediate), Jekyll (Intermedidate)

***GitHub*** <https://github.com/kbsezginel>

***Scientific*** HPC, Cloud computing, RASPA, Lammps, Orca, CP2K, Materials Studio, Aspen HYSYS

***Graphics/Video* Blender (Advanced), Inkscape (Advanced), Gimp (Intermediate), Adobe Premiere (Beginner)**

***Audio* Ableton (Advanced), Audacity (Advanced)**

***Laboratory*** FT-IR, PXRD, High Pressure Volumetric Analyzer, Chemisorption Analyzer, TGA, Glovebox

## PERSONAL

* Interested in electronic and jazz music, for original songs: <https://soundcloud.com/kbs_music>
* Scientific visualization portfolio: <https://kutaybs.com/visualization/portfolio>
* 3-D printing, microcontrollers, home automation, woodworking, climbing, camping