Technical Program

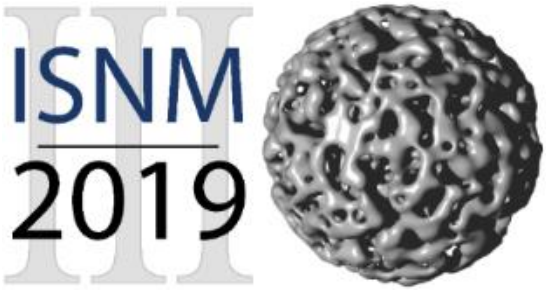
Third International Symposium on Nanoporous Materials by Alloy Corrosion

Philadelphia, PA, USA

February 24-28, 2019

Organizers: Joshua Snyder, Ian McCue, Haijun Jin

Conference Website: http://www.chemeng.drexel.edu/snyderlab/symposium/index.html



Third International Symposium on Nanoporous Materials by Alloy Corrosion

Time	Sunday, Feb 24	Monday, Feb 25	Tuesday, Feb 26	Wednesday, Feb 27	Thursday, Feb 28
7:30 - 8:40		Breakfast	Breakfast	Breakfast	Breakfast
		Fundamentals of Pattern Fromation During Selective Dissolution Session Chair: Qing Chen	**Self Organized Morphologies via New Mechanisms** Session Chair: Zhen Lu	**Catalysis at the Nanoscale I** Session Chair: Laetitia Dubau	
8:40 - 9:20		Jonah Erlebacher	Qing Chen	Feng Jiao	
9:20 - 10:00		Ian McCue	Mingwei Chen	Frederic Maillard	
10:00 - 10:40		Roger Newman	Joseph Ryan	Jurgen Biener	Departure
10:40 - 11:00		Break	Haomin Liu	Break	
		Morphological Coarsening Session Chair: Eva-Maria Steyskal	**Liquid Metal Dealloying** Session Chair: Karen Chen-Wiegart	**Catalysis at the Nanoscale II** Session Chair: Pietro Lopes	
11:00 - 11:20		Samuel Welbron	Gina Greenidge	Matthias Graf	
11:20 - 12:00		Peter Voorhees	Hidemi Kato	Eric Desti	
12:00 - 13:30		Lunch	Lunch	Lunch	
		Mechanical Response at the Nanoscale I Session Chair: Haijun Jin	**In-situ and Direct Measurements at the Nanoscale** Session Chair: Qi Zhen	**Understanding the Impact of Kinetics on Pattern Formation** Session Chair: Ian McCue	
13:30 - 14:10		Diana Farkas	Mitsu Murayama	Karen Chen-Wiegart	
14:10 - 14:50		Jorg Weissmuller	Erica Lilleodden	Alain Karma	
14:50 - 15:10		Ju-Young Kim	Hansol Jeon	Yi Ding	
15:10 - 15:30			Eun-Ji Gwak		
15:30 - 16:00		Coffee Break	Coffee Break	Coffee Break	
	Arrival	**Mechanical Response at the Nanoscale II** Session Chair: Patrick Huber	**Functional Application of Nanoporous Structures** Session Chair: Eric Detsi	**Dealloying in Novel Media** Session Chair: Xia Yanjie	
16:00 - 16:20		Eunji Song	Erkin Seker	Swarnendu Chatterjee	
16:20 - 16:40		Shan Shi	Markus Goessler	Jiuhui Han	
16:40 - 17:00		Wei Yang	Timothy Wong	Wenkai Hu	
17:00 - 17:30	Dinner	Break	Break	Break	
17:30 - 18:00		Dinner	Dinner		
18:00 - 19:00	Keynote: Karl Sieradzki			Dinner at Yards Brewery	
19:00 - 21:00	Happy Hour	Poster Session	Poster Session		

Modified Schedule

	Wednesday, Feb 27
Time	
7:30 - 8:40	Breakfast
	Catalysis at the Nanoscale I Session Chair: Laetitia Dubau
8:40 - 9:20	Feng Jiao
9:20 - 10:00	Frederic Maillard
10:00 - 10:40	Jurgen Biener
10:40 - 11:00	Break
	Catalysis at the Nanoscale II Session Chair: Pietro Lopes
11:00 - 11:20	Matthias Graf
11:20 - 12:00	Eric Desti
12:00 - 13:30	Lunch
	Understanding the Impact of Kinetics on Pattern Formation Session Chair: Ian McCue
13:30 - 14:10	Karen Chen-Wiegart
14:10 - 14:50	Alain Karma
14:50 - 15:20	Coffee Break
	Dealloying in Novel Media Session Chair: Xia Yanjie
15:20 - 15:30	Swarnendu Chatterjee
15:30 - 15:50	Jiuhui Han
15:50 - 16:10	Wenkai Hu
16:10 - 18:00	Break
18:00 - 21:00	Dinner at Yards Brewery

Poster Presentations

Monday Evening

First Name	Last Name	Affiliation	Title
Congcheng	Wang	Department of Mechanical Enginering Hong Kong University of Science and Technology	The Fabrication of Nanoporous Zn via Reduction-induced Decomposition
Yawei	Li	Department of Chemical and Biological Engineering Drexel University	Mitigation of structural and compositional instability in 3-dimensional, nanoporous electrocatalysts
Benedikt	Roschning	Institute of Mateirals Physics and Technology, Hamburg University of Technology	Hybrid materials made from nanoporous metals and electrically conductive polymer as electro-chem-mechanical actuators
Lukas	Luhrs	Institute of Materials Physics and Technology, Hamburg University of Technology	Nanoporous Copper-Nickel – Macroscopic bodies of a strong and deformable nanoporous base metal by dealloying
Hai-Jun	Jin	Shenyang National Laboratory for Materials Science, Institute of Metal Research, Chinese Academy of Sciences	Role of grain boundary in plastic deformation of nanoporous gold
Patrick	Huber	Institute of Materials Physics and Technology, Hamburg University of Technology	Electrowetting at Nanoporous Surfaces: Switchable Droplet Shape, Spreading and Imbibition
Shan	Shi	Institute of Materials Research, Materials Mechanics, Helmholtz-Zentrum Geesthacht	Verifying Larché-Cahn theory by measuring open-system elasticity of nanoporous palladium(-gold)-hydrogen
Norbert	Huber	Institute of Materials Research, Materials Mechanics, Helmholtz-Zentrum Geesthacht	Connections between Topology and Macroscopic Mechanical Properties of Three-Dimensional Open-Pore Materials
Jiuhui	Han	WPI Advanced Institute for Materials Research, Tohoku University	3D Microporous Carbon by Room-Temperature Chemical Dealloying of Metallic Carbides
Yanjie	Xia	Advanced Institute for Materials Research, Tohoku University	Kinetics of vapor phase dealloying
Yijuan	Wu	Institute of Materials Research, Materials Mechanics, Helmholtz-Zentrum Geesthacht, Geesthacht	Micro-mechanical behavior of nanoporous gold with and without an electrochemical environment
Erkin	Seker	Departments of Electrical & Computer Engineering and Food Science & Technology University of California	Sequence-Specific Electrochemical Detection and Purification of Nucleic Acids with Nanoporous Gold Electrodes
Swarnendu	Chatterjee	Department of Chemical and Biological Engineering, Drexel University	Evolution of Nanoporosity upon Thermal Decomposition of Transition Metal Dichalcogenides
Zhen	Qi	Materials Science Division, Physical Life Science Directorate, Lawrence Livermore	Oxide-related performance improvement of nanoporous gold electrodes for electrochemical CO2 reduction
Markus	Goessler	Institute of Materials Physics, Graz University of Technology	ON- and OFF-Switching of Ferromagnetism in Nanoporous Pd(Co)
Birthe	Zandersons	Institute of Materials Physics and Technology, Hamburg University of Technology	Mechanical properties of nanoporous gold – A comparative investigation on the impact of the composition of the master alloy

Tuesday Evening

First Name	Last Name	Affiliation	Title
Gina	Greenidge	Johns Hopkins University	Synthesis of Porous Graphite by Dealloying of Silicon Carbide
John	Corsi	Department of Materials Science & Engineering, University of Pennsylvania	Operando TEM Investigation of Lithium Storage Mechanisms in Nanoporous Alloy-Type Lithium-Ion Anodes
Claudia	Richert	Institute of Materials Research, Materials Mechanics, Helmholtz-Zentrum Geesthacht	Effect and Correction of Ligament Diameter Estimation on Macroscopic Mechanical Properties of Nanoporous Gold
Nathan	Beets	Virginia Tech Department of Materials Science and Engineering	Computational and Experimental Observation Of Crack Propagation in Nanoporous Gold
Alyssa	Chuang	Department of Materials Science and Engineering, Johns Hopkins University	Novel Electronic Applications of Porous Niobium
Timothy	Wong	University of Toronto	Leveraging Nano-scale Physics for Nanoporous Gold Based Gas Sensing
Won-Young	Park	Department of Materials Science, Graduate School of Engineering, Tohoku University	Electrochemical properties of three-dimensional bicontinuous porous carbon produced by liquid metal dealloying
Sam	Price	Johns Hopkins University	Creation of Nanoporous Carbon and Silicon Structures Through Liquid Metal Dealloying of Mn80Si10C10
Kate	Elder	Materials Science and Engineering, Northwestern University	Microstructural characterization using two-point statistics: Applications to nanoporous gold
Samuel	Welborn	University of Pennsylvania	Real-time USAXS and WAXS studies of morphology evolution in 3D nanoporous gold during electrochemical dealloying and Post-Dealloying Coarsening
Lyudmila	Moskaleva	Institute of Applied and Physical Chemistry, University of Bremen	Understanding dioxygen activation on nanoporous gold. A DFT and microkinetic modeling study
Pietro	Lopes	MSD, Argonne National Lab	Nanoporosity Evolution Derived from Metal Dissolution Rates
Chonghang	Zhao	Department of Materials Science and Chemical Engineering, Stony Brook University	Bi-continuous Pattern Formation in Thin Films via Solid-State Interfacial Dealloying
Aliya	Carter	JHU Material Science	Nanoporous Aluminum Two Ways
Eva-Maria	Steyskal	Institute of Materials Physics, Graz University of Technology	Dynamical Insights to Nanoporous Structure Evolution during Electrochemical Dealloying Provided by In-Situ Resistometry
Zhen	Lu	AIST	Three-dimensional bicontinuous nanoporous materials by vapor phase dealloying

Conference Presentations

Invited Presentations

First Name	Last Name	Affiliation	Title
Karl	Sieradzki	Arizona State University	Dealloying at High Homologous Temperatures
Jonah	Erlebacher	Johns Hopkins University	Ancillary Challenges in Dealloying
Feng	Jiao	University of Delaware	Nanoporous metallics for electrocatalytic reactions
Mingwei	Chen	Johns Hopkins University	Vapor Phase Dealloying
Jurgen	Biener	Lawerence Livermore National Laboratory	Dealloying Derived Nanoporous Architectures for Improved Mass Transport
Eric	Desti	University of Pennsylvania	Emerging Non-Precious Nanoporous Materials for Alkali-ion Batteries and Hydrogen Energy Technologies
Jorg	Weissmuller	Hamburg University of Technology, Institute of Materials Research, Materials Mechanics, Helmholtz-Centre Geesthacht	Mechanics of Dealloyed Metal Network Structures
Diana	Farkas	Virgina Tech	Simulation Studies of the Mechanical Response of Nanoporous Au
Peter	Voorhees	Northwestern University	Coarsening of Nanoporous Metals: Self-Similarity and Stability
Qing	Chen	HKUST	Reduction-induced Decomposition of Compounds: Self-organization towards Nanoporous Metals at Highly Incoherent Interfaces
Karen	Chen-Wiegart	Stony Brook University	Processing-Structure Correlation in Dealloying by Aqueous Solution, Liquid Metal and Solid-State Diffusion by X-ray Microscopy and Spectroscopy
Ian	McCue	Johns Hopkins Applied Physics Lab	Trends in Pattern Formation During Dealloying in Different Solvent Media
Hidemi	Kato	Tohoku University	Three-dimensional bicontinuous nanoporous high-entropy alloy and its sluggish coarsening
Erica	Lilleodden	Helmholtz-Zentrum Geesthacht	
Yi	Ding	Tianjin University of Technology	Structural evolution of nanoporous metals: an in-situ TEM study
Joseph	Ryan	Pacific Northwest National Laboratory	Lessons in glass corrosion from the dealloying of metallic systems
Frederic	Maillard	CNRS/LEPMI	Structural Disorder and Oxygen Reduction Reaction Kinetics: Friends or Foes?
Roger	Newman	University of Toronto	Nanoporous Gold - from Advanced Characterization to Future Applications
Mitsu	Murayama	Virgina Tech	Investigating the origin of macroscopic plastic flow localization of nanoporous gold thin foil during tensile deformation by in situ transmission electron microscopy
Ju-young	Kim	UNIST	Controls of microstructure to enhance mechanical properties of nanoporous gold
Alain	Karma	Northeastern University	Morphological Control during Liquid Metal Dealloying
Haomin	Liu	Univesity of Rochester	A Modified scaling law for stiffness of nanoporous materials accounting for deformation mode effects of nodes and ligaments

Abstract Talks

First Name	Last Name	Affiliation	Title
Wenkai	Hu	Shenyang National Laboratory for Materials Science, Institute of Metal Research, Chinese Academy of Sciences	Bicontinuous structure by reversing peritectic reaction: is it dealloying?
Eunji	Song	School of Materials Science and Engineering, UNIST	Fracture toughness of nanoporous gold with hierarchical grain structure
Hansol	Jeon	School of Materials Science and Engineering, UNIST	Ligament size effect in strength of nanoporous gold in tensile and compressive loading
Shan	Shi	Institute of Materials Research, Materials Mechanics, Helmholtz-Zentrum Geesthacht	Verifying Larché-Cahn theory by measuring open-system elasticity of nanoporous palladium(-gold)-hydrogen
Jiuhui	Han	WPI Advanced Institute for Materials Research, Tohoku University	3D Microporous Carbon by Room-Temperature Chemical Dealloying of Metallic Carbides
Wei	Yang	Shenyang National Laboratory for Materials Science, Institute of Metal Research, Chinese Academy of Sciences	Nanoporous Aluminum: synthesis and mechanical properties
Eun-Ji	Gwak	School of Materials Science and Engineering, UNIST	Enhanced tensile strength of nanotwinned nanoporous gold
Erkin	Seker	Departments of Electrical & Computer Engineering and Food Science & Technology University of California	Sequence-Specific Electrochemical Detection and Purification of Nucleic Acids with Nanoporous Gold Electrodes
Swarnendu	Chatterjee	Department of Chemical and Biological Engineering, Drexel University	Evolution of Nanoporosity upon Thermal Decomposition of Transition Metal Dichalcogenides
Markus	Goessler	Institute of Materials Physics, Graz University of Technology	ON- and OFF-Switching of Ferromagnetism in Nanoporous Pd(Co)
Gina	Greenidge	Johns Hopkins University	Synthesis of Porous Graphite by Dealloying of Silicon Carbide
Timothy	Wong	University of Toronto	Leveraging Nano-scale Physics for Nanoporous Gold Based Gas Sensing
Matthias	Graf	Institute of Materials Research, Helmholtz-Zentrum Geesthacht	Nanoporous Gold reveals the Origin of Photoelectrons injected into Hydrogen Evolution Reaction
Samuel	Welborn	University of Pennsylvania	Real-time USAXS and WAXS studies of morphology evolution in 3D nanoporous gold during electrochemical dealloying and Post-Dealloying Coarsening

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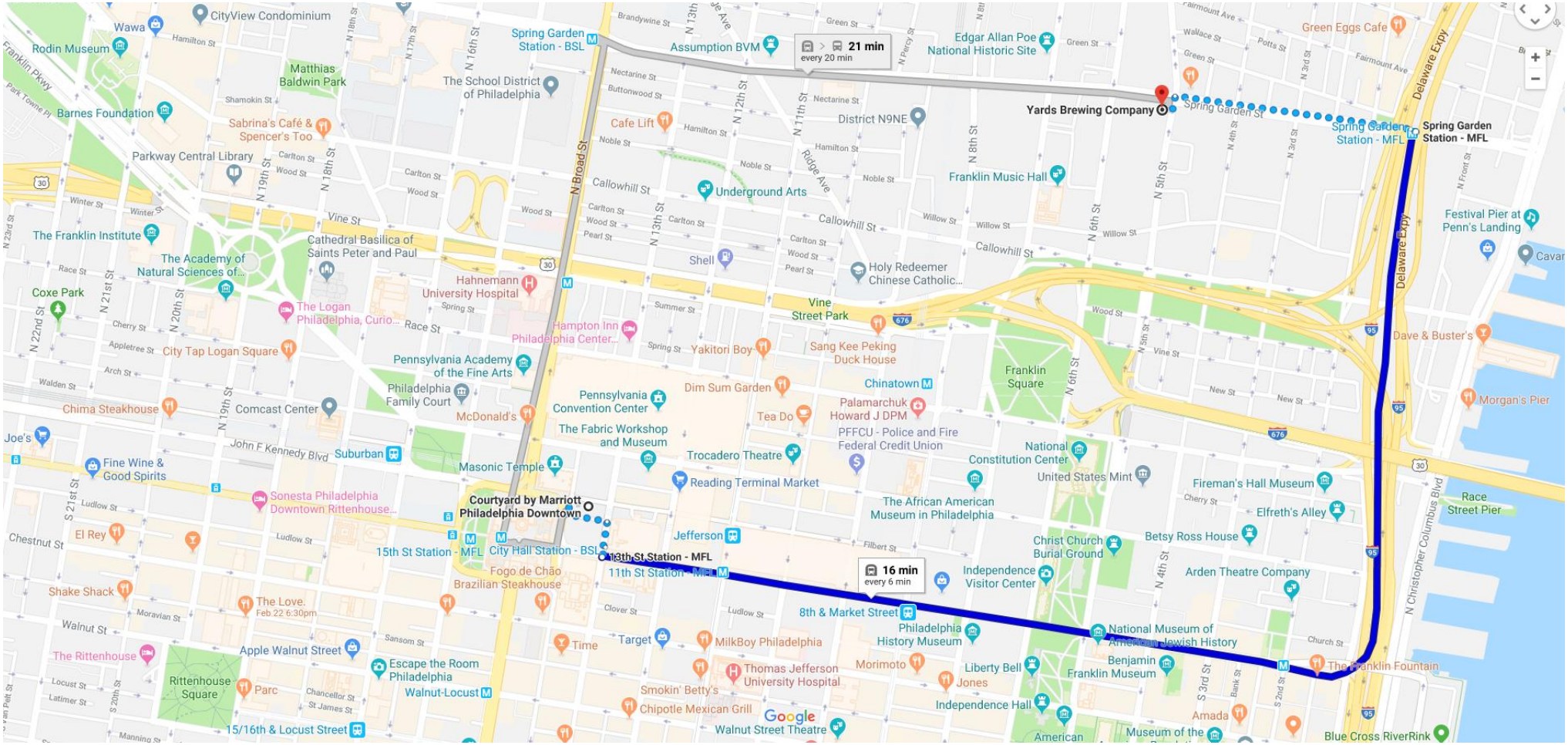


Yards Brewing Company Taproom

500 Spring Garden St., Philadelphia, PA 19123

Eastbound Market-Frankford Line: http://www.septa.org/service/mfl/

11:11 AM **Courtyard by Marriott Philadelphia Downtown**
21 N Juniper St, Philadelphia, PA 19107

Walk
About 3 min , 0.1 mi

⚠ Use caution - may involve errors or sections not suited for walking

Head southwest toward N Juniper St/E Penn Square
66 ft

Turn left onto Commerce St
328 ft

Turn right onto N 13th St
ⓘ Destination will be on the left
187 ft

Take entrance North 13th St Elevator
75 ft

11:14 AM **13th St Station - MFL**

MFL
Frankford Trans Ctr - All Stops
6 min (5 stops)
Service run by Southeastern Pennsylvania Transportation Authority
Ticket information

11:20 AM **Spring Garden Station - MFL**

11:14 AM **13th St Station - MFL**

MFL
Frankford Trans Ctr - All Stops
6 min (5 stops)
Service run by Southeastern Pennsylvania Transportation Authority
Ticket information

11:20 AM **Spring Garden Station - MFL**

Walk
About 7 min , 0.4 mi

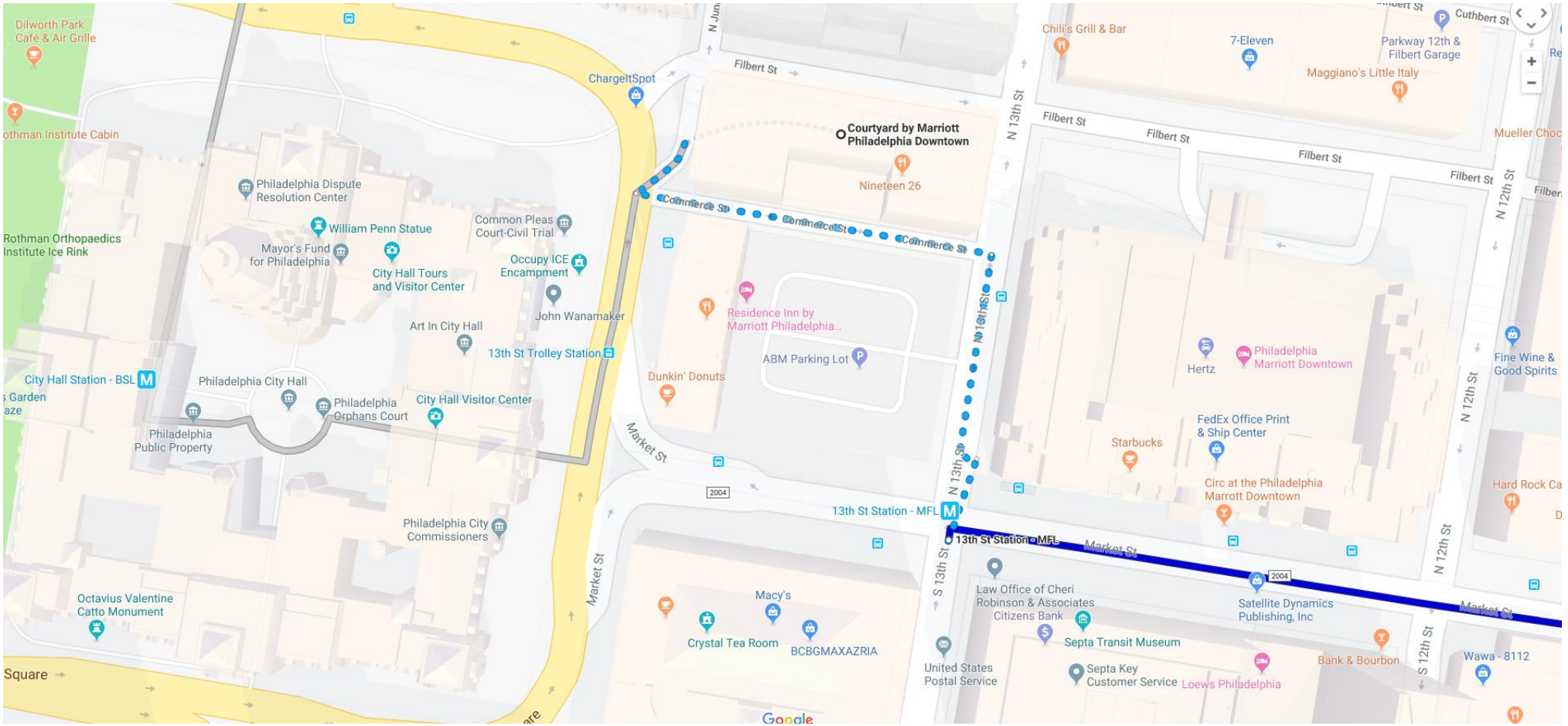
⚠ Use caution - may involve errors or sections not suited for walking

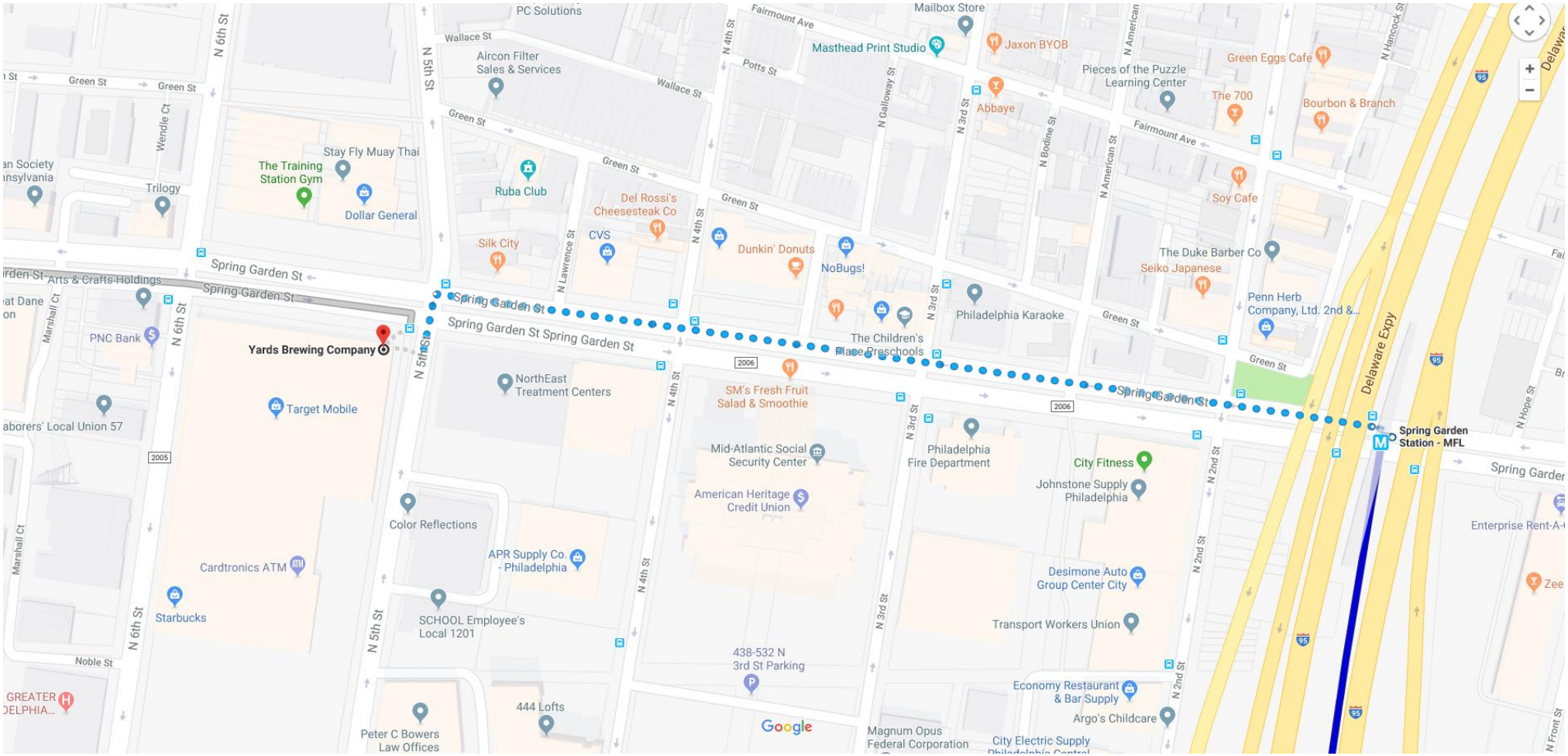
Take exit Spring Garden Station Entrance
43 ft

Head west on Spring Garden St toward N 2nd St
0.3 mi

Turn left onto N 5th St
ⓘ Destination will be on the right
118 ft

11:27 AM **Yards Brewing Company**
500 Spring Garden St, Philadelphia, PA 19123


Courtyard by Marriott Philadelphia Downtown
Commerce St
Filbert St
N 13th St
N 12th St
Market St
S 13th St
13th St Station - MFL
13th St Station - BSL
Nineteen 26
Residence Inn by Marriott Philadelphia...
ABM Parking Lot
Dunkin' Donuts
ChargeItSpot
Philadelphia Dispute Resolution Center
William Penn Statue
Mayor's Fund for Philadelphia
City Hall Tours and Visitor Center
Common Pleas Court-Civil Trial
Occupy ICE Encampment
John Wanamaker
Art In City Hall
13th St Trolley Station
City Hall Station - BSL
Philadelphia City Hall
Philadelphia Orphans Court
City Hall Visitor Center
Philadelphia Public Property
Philadelphia City Commissioners
Octavius Valentine Catto Monument
Rothman Orthopaedics Institute Ice Rink
Dilworth Park Café & Air Grille
Macy's
Crystal Tea Room
BCBGMAXAZRIA
United States Postal Service
Law Office of Cheri Robinson & Associates
Citizens Bank
Septa Transit Museum
Septa Key Customer Service
Loews Philadelphia
Satellite Dynamics Publishing, Inc
Bank & Bourbon
Wawa - 8112
Hertz
Philadelphia Marriott Downtown
FedEx Office Print & Ship Center
Starbucks
Circ at the Philadelphia Marriott Downtown
Chili's Grill & Bar
7-Eleven
Parkway 12th & Filbert Garage
Maggiano's Little Italy
Fine Wine & Good Spirits
Hard Rock Ca
Mueller Choc
Cuthbert St
Square
Google


Yards Brewing Company
Spring Garden St
Spring Garden Station - MFL
Delaware Expy
PC Solutions
Aircon Filter Sales & Services
Masthead Print Studio
Mailbox Store
Jaxon BYOB
Pieces of the Puzzle Learning Center
Green Eggs Cafe
Abbaye
The 700
Bourbon & Branch
Soy Cafe
The Duke Barber Co
Seiko Japanese
Penn Herb Company, Ltd. 2nd &...
Philadelphia Karaoke
The Children's Place Preschools
Stay Fly Muay Thai
The Training Station Gym
Dollar General
Trilogy
Ruba Club
Del Rossi's Cheesesteak Co
CVS
Silk City
Dunkin' Donuts
NoBugs!
Arts & Crafts Holdings
PNC Bank
Target Mobile
NorthEast Treatment Centers
SM's Fresh Fruit Salad & Smoothie
Mid-Atlantic Social Security Center
American Heritage Credit Union
Philadelphia Fire Department
City Fitness
Johnstone Supply Philadelphia
Color Reflections
APR Supply Co. - Philadelphia
Cardtronics ATM
Starbucks
SCHOOL Employee's Local 1201
438-532 N 3rd St Parking
Desimone Auto Group Center City
Transport Workers Union
Economy Restaurant & Bar Supply
Argo's Childcare
444 Lofts
Peter C Bowers Law Offices
Magnum Opus Federal Corporation
City Electric Supply
Enterprise Rent-A-
Google