

**RESEARCH ARTICLES****peer-reviewed publications; h-index (Google Scholar): 100; total citations >39,000**

1. Kubota, M.; Rosenberg, F. S.; Sailor, M. J., "Bimetallic-Mediated Reaction of Carbon Monoxide and Dioxygen." *J. Am. Chem. Soc.* **1985**, *107* (15), 4558-4559.
2. Sailor, M. J.; Shriver, D. F., "Preparation, Structure, and Reactivity of an Anionic Ruthenium Ketonylidene:  $[\text{PPN}]_2[\text{Ru}_3(\text{CO})_6(\mu\text{-CO})_3(\mu_3\text{-CCO})]$ ." *Organometallics* **1985**, *4* (8), 1476-1478.
3. Sailor, M. J.; Brock, C. P.; Shriver, D. F., "Alkylation Reactions of the CCO Ligand in Triruthenium Carbonyl Clusters. Synthesis and X-ray Crystal Structure of  $\text{Ru}_3(\text{CO})_9(\mu_3\text{-CO})(\mu_3\text{-C:C}(\text{OCH}_3)\text{CH}_3)$ ." *J. Am. Chem. Soc.* **1987**, *109* (20), 6023-6029.
4. Sailor, M. J.; Shriver, D. F., "Vibrational Spectroscopic Characterization of the CCO Ligand and the Possible Occurrence of CCO on Surfaces." *J. Am. Chem. Soc.* **1987**, *109* (16), 5039-5041.
5. Stanghellini, P. L.; Sailor, M. J.; Kuznesof, P.; Whitmire, K. H.; Hriljac, J. A.; Kolis, J. W.; Zheng, Y.; Shriver, D. F., "Vibrational Frequencies Associated with the Carbide Ligand in Iron Butterfly Clusters." *Inorg. Chem.* **1987**, *26* (18), 2950-2954.
6. Went, M. J.; Sailor, M. J.; Bogdan, P. L.; Brock, C. P.; Shriver, D. F., "Synthesis and Chemistry of  $[\text{Os}_3(\text{CO})_9(\mu_3\text{-CCO})]^{2-}$ . Metal Ensemble Effects on the Reactions of the CCO Ligand." *J. Am. Chem. Soc.* **1987**, *109* (20), 6023-6029.
7. Sailor, M. J.; Sabat, M.; Shriver, D. F., "Reaction of the Anionic Acylmethylidyne Cluster  $[\text{Ru}_3(\text{CO})_9(\mu_3\text{-CO})(\mu_3\text{-CC}(\text{O})\text{CH}_3)]^-$  with Carbon Monoxide and Hydrogen: Reversible Carbon-Carbon and Carbon-Hydrogen Bond Forming Reactions." *Organometallics* **1988**, *7* (3), 728-736.
8. Sailor, M. J.; Shriver, D. F., "Carbon-Carbon and Carbon-Hydrogen Bond Formation in the Chemistry of Triruthenium Clusters." *Polyhedron* **1988**, *7* (10-11), 955-960.
9. Sailor, M. J.; Went, M. J.; Shriver, D. F., "Characteristic Vibrational Frequencies and Normal Modes of the CCO Ligand in Trinuclear Ketonylidene Clusters." *Inorg. Chem.* **1988**, *27* (15), 2666-2672.
10. Shriver, D. F.; Sailor, M. J., "Transformations of Carbon Monoxide and Related Ligands on Metal Ensembles." *Acc. Chem. Res.* **1988**, *21* (10), 374-379.
11. Halperin, K.; Peng, J. B.; Sailor, M. J.; Gadwood, R.; Ketterson, J. B.; Dutta, P., Direct "Measurements of the Mechanical Properties of Polymerized and Unpolymerized Langmuir-Blodgett Films." *J. Polym. Sci., Part B: Polym. Phys.* **1989**, *27* (6), 1289-1300.
12. Lewis, N. S.; Barnes, C. A.; Heben, M. J.; Kumar, A.; Lunt, S. R.; McManis, G. E.; Miskelly, G. M.; Penner, R. M.; Sailor, M. J.; Santangelo, P. G.; Shreeve, G.; Tufts, B. J.; Youngquist, M.; Kavanagh, R. W.; Kellogg, S. E.; Vogelaar, R. B.; Wang, T. R.; Kondrat, R.; New, R., "Searches for Low-Temperature Nuclear Fusion of Deuterium in Palladium." *Nature* **1989**, *340* (6234), 525-530.

13. Miskelly, G. M.; Heben, M. J.; Kumar, A.; Penner, R. M.; Sailor, M. J.; Lewis, N. S., "Analysis of the Published Calorimetric Evidence for Electrochemical Fusion of Deuterium in Palladium." *Science* **1989**, *246* (4931), 793-796.
14. Ginsburg, E. J.; Gorman, C. B.; Grubbs, R. H.; Klavetter, F. L.; Lewis, N. S.; Marder, S. R.; Perry, J. W.; Sailor, M. J. "Synthesis, Characterization, and Applications of Substituted Polyacetylenes Derived from Ring-Opening Metathesis Polymerization of Cyclooctatetraenes," *NATO ASI Ser., Ser. E*, **1990**, 65-81.
15. Ginsburg, E. J.; Gorman, C. B.; Sailor, M. J.; Lewis, N. S.; Grubbs, R. H. "The Application of Ring-Opening Metathesis Polymerization to the Synthesis of Substituted Polyacetylenes," *NATO ASI Ser., Ser. C*, **1990**, 537-541.
16. Sailor, M. J.; Ginsburg, E. J.; Gorman, C. B.; Kumar, A.; Grubbs, R. H.; Lewis, N. S., "Thin Films of n-Si/Poly-(CH<sub>3</sub>)<sub>3</sub>Si-Cyclooctatetraene: Conducting-Polymer Solar Cells and Layered Structures. *Science* **1990**, *249*, 1146-1149.
17. Sailor, M. J.; Klavetter, F. L.; Grubbs, R. H.; Lewis, N. S., "Electronic properties of junctions between silicon and organic conducting polymers." *Nature* **1990**, *346* (6280), 155-157.
18. Tufts, B. J.; Abrahams, I. L.; Caley, C. E.; Lunt, S. R.; Miskelly, G. M.; Sailor, M. J.; Santangelo, P. G.; Lewis, N. S.; Hedman, B. M.; Roe, A. L.; Hodgson, K. O., "XPS and EXAFS Studies of the Reactions of Co(III) Amine Complexes with GaAs Surfaces." *J. Am. Chem. Soc.* **1990**, *112* (13), 5123-5136.
19. Gorman, C. B.; Ginsburg, E. J.; Sailor, M. J.; Moore, J. S.; Lewis, N. S.; Grubbs, R. H., "Substituted Polyacetylenes Through the Ring-Opening Metathesis Polymerization (ROMP) of Substituted Cyclooctatetraenes - A Route into Soluble Polyacetylene." *Synth. Metals* **1991**, *41* (3), 1033-1038.
20. Kressin, A.M., Doan, V.V., Klein, J.D., and Sailor, M.J., Synthesis of Stoichiometric Cadmium Selenide Films via Sequential Monolayer Electrodeposition. *Chem. Mater.*, **1991**, *3* (6): p. 1015-20.
21. Doan, V.V. and Sailor, M.J., Photolithographic Fabrication of Micron-Dimension Porous Si Structures Exhibiting Visible Luminescence. *Appl. Phys. Lett.*, **1992**, *60* (5), 619-20.
22. Doan, V.V. and Sailor, M.J., Luminescent Color Image Generation on Porous Si. *Science*, **1992**, 256, 1791-2.
23. Heinrich, J.L., Curtis, C.L., Credo, G.M., Kavanagh, K.L., and Sailor, M.J., "Luminescent colloidal Si suspensions from porous Si." *Science*, **1992**. 255: p. 66-8. *First report of micro-and nano-particles prepared from porous Si. The ultrasound method described here is the leading means to prepare microparticles and nanoparticles of electrochemically etched porous Si.*
24. Lauerhaas, J.M., Credo, G.M., Heinrich, J.L., and Sailor, M.J., "Reversible Luminescence Quenching of Porous Si by Solvents." *J. Am. Chem. Soc.*, **1992**. 114: p. 1911-2. *First report of photoluminescence quenching of porous Si by molecular adsorbates.*
25. Sailor, M.J. and Kavanagh, K.L., "Porous Silicon-What is Responsible for the

- Visible Luminescence?" *Adv. Mater.*, **1992**. 4, 432-4.
26. Curtis, C.L., Doan, V.V., Credo, G.M., and Sailor, M.J., "Observation of Optical Cavity Modes in Photoluminescent Porous Silicon Films." *J. Electrochem. Soc.*, **1993**. 140(12): p. 3492-4. *First report showing the interference spectrum from a porous Si film as a means to detect chemicals.*
  27. Curtis, C.L., Ritchie, J.E., and Sailor, M.J., "Fabrication of Conducting Polymer Interconnects." *Science*, **1993**. 262: p. 2014.
  28. Doan, V.V., Penner, R.M., and Sailor, M.J., "Enhanced Photoemission from Short-Wavelength Photochemically Etched Porous Silicon." *J. Phys. Chem.*, **1993**. 97: p. 4505-8.
  29. Dubbelday, W.B., Szaflarski, D.M., Shimabukuro, R.L., Russell, S.D., and Sailor, M.J., "Photoluminescent Thin-Film Porous Silicon on Sapphire." *Appl. Phys. Lett.*, **1993**. 62(14): p. 1694-6.
  30. Klein, J.D., Herrick, R.D., Palmer, D., Sailor, M.J., Brumlik, C.J., and Martin, C.R., "Electrochemical Fabrication of Cadmium Chalcogenide Microdiode Arrays." *Chem. Mater.*, **1993**. 5(7): p. 902-4.
  31. Lauerhaas, J.M. and Sailor, M.J., "Chemical Modification of the Photoluminescence Quenching of Porous Silicon." *Science* **1993**, 261, 1567-1568. *First report showing chemical modification of a porous Si film provides a means to impart selectivity in the detection of chemicals. This paper also represents the first time porous silicon was chemically modified (beyond simple thermal oxidation).*
  32. Sailor, M.J. and Curtis, C.L., "Conducting Polymer Connections for Molecular Devices." *Adv. Mater.*, **1994**. 6(9): p. 688-92.
  33. Fisher, D.L., Harper, J., and Sailor, M.J., "Energy Transfer Quenching of Porous Si Photoluminescence by Aromatic Molecules." *J. Am. Chem. Soc.*, **1995**. 117: p. 7846-7.
  34. Green, W.H., Lee, E.J., Lauerhaas, J.M., Bitner, T.W., and Sailor, M.J., "Electrochemiluminescence From Porous Silicon in Formic Acid Liquid-Junction Cells." *Appl. Phys. Lett.*, **1995**. 67(10): p. 1468-70.
  35. Herrick, R.D., Kaplan, A.S., Chinh, B.K., Shane, M.J., Sailor, M.J., Kavanagh, K.L., McCreery, R.L., and Zhao, J., "Room-Temperature Electrosynthesis of Carbonaceous Fibers." *Adv. Mater.*, **1995**. 7(4): p. 398-401.
  36. Lee, E.J., Ha, J.S., and Sailor, M.J., "Photoderivatization of the Surface of Luminescent Porous Silicon With Formic Acid." *J. Am. Chem. Soc.*, **1995**. 117(31): p. 8295-6.
  37. Gurtner, C. and Sailor, M.J., "Selective Construction of Electrical Connections Using an Organic Charge-Transfer Salt." *Adv. Mater.*, **1996**. 8(11): p. 897-9.
  38. Harper, J. and Sailor, M.J., "Detection of Nitric Oxide and Nitrogen Dioxide with Photoluminescent Porous Silicon." *Anal. Chem.*, **1996**. 68(21): p. 3713-7.
  39. Lee, E.J., Bitner, T.W., Ha, J.S., Shane, M.J., and Sailor, M.J., "Light-Induced Reactions of Porous and Single-Crystal Si Surfaces with Carboxylic Acids." *J. Am.*

- Chem. Soc., **1996**. 118(23): p. 5375-82.
40. Lee, E.J., Bitner, T.W., Hall, A.P., and Sailor, M.J., "Photoinduced Surface Reactions of Reverse-Biased n-type Porous Si." *J. Vac. Sci. Technol. B*, **1996**. 14(4): p. 2850-4.
  41. Su, K., Tilley, T.D., and Sailor, M.J., "Molecular And Polymer Precursor Routes To Manganese-Doped Zinc Orthosilicate Phosphors." *J. Am. Chem. Soc.*, **1996**. 118(14): p. 3459-68.
  42. Green, W.H., Le, K.P., Grey, J., Au, T.T., and Sailor, M.J., "White Phosphors from a Silicate-Carboxylate Sol-Gel Precursor that Lack Metal Activator Ions." *Science*, **1997**. 276: p. 1826-8. *Reported the discovery of a non-aqueous sol-gel reaction that generates intrinsically luminescent Si oxide material. Noteworthy in that it shows the reaction of the common surface-coupling agent, aminopropyl(triethoxy)silane (APTES) readily reacts with carboxylic acids to give a photoluminescent product.*
  43. Harper, J. and Sailor, M.J., "Photoluminescence Quenching and the Photochemical Oxidation of Porous Silicon by Molecular Oxygen." *Langmuir*, **1997**. 13(17): p. 4652-8.
  44. Harper, T.F. and Sailor, M.J., "Using Porous Silicon as a Hydrogenating Agent: Derivatization of the Surface of Luminescent Nanocrystalline Silicon with Benzoquinone." *J. Am. Chem. Soc.*, **1997**. 119(29): p. 6943-4.
  45. Lin, V.S.-Y., Motesharei, K., Dancil, K.S., Sailor, M.J., and Ghadiri, M.R., "A Porous Silicon-Based Optical Interferometric Biosensor." *Science*, **1997**, 278, (5339), 840-843. *Patent licensed to Silicon Kinetics, inc., who began selling a porous Si-based biosensor in May, 2008.*
  46. Sailor, M.J. and Lee, E.J., "Surface Chemistry of Luminescent Silicon Nanocrystallites." *Adv. Mater.*, **1997**, 9, 783-93.
  47. Song, J.H. and Sailor, M.J., "Quenching of Photoluminescence from Porous Silicon by Aromatic Molecules." *J. Am. Chem. Soc.*, **1997**, 119, 7381-5.
  48. Gurtner, C., Sailor, M.J., Katz, A.S., and Dynes, R.C., "Electrochemical formation of contacts between platinum or gold electrodes with the organic charge-transfer salts tetrathiafulvalenium bromide (TTFBr<sub>x</sub>, x = 0.74-0.79) or bis(tetramethyltetraselenafulvalenium) perchlorate ((TMTSF)<sub>2</sub>ClO<sub>4</sub>)." *J. Phys. Chem. B.*, **1998**, 102, 1599-604.
  49. Janshoff, A., Dancil, K.-P.S., Steinem, C., Greiner, D.P., Lin, V.S.-Y., Gurtner, C., Motesharei, K., Sailor, M.J., and Ghadiri, M.R., "Macroporous p-type silicon Fabry-Perot layers. Fabrication, characterization, and applications in biosensing." *J. Am. Chem. Soc.*, **1998**, 120, 12108-16.
  50. Song, J.H. and Sailor, M.J., "Functionalization of Nanocrystalline Porous Silicon Surfaces with Aryllithium Reagents: Formation of Silicon-Carbon Bonds by Cleavage of Silicon-Silicon Bonds." *J. Am. Chem. Soc.*, **1998**, 120, 2376-81.
  51. Song, J.H. and Sailor, M.J., "Dimethyl Sulfoxide as a Mild Oxidizing Agent for Porous Silicon and its Effect on Photoluminescence." *Inorg. Chem.*, **1998**, 37,

3355-60.

52. Dancil, K.-P.S., Greiner, D.P., and Sailor, M.J., "A porous silicon optical biosensor: detection of reversible binding of IgG to a protein A-modified surface." *J. Am. Chem. Soc.*, **1999**, *121*, 7925-30.
53. Gurtner, C., Wun, A.W., and Sailor, M.J., "Surface modification of porous silicon by electrochemical reduction of organo halides." *Angew. Chem. Int. Ed.*, **1999**, *38*(13/14): p. 1966-8.
54. Song, J.H. and Sailor, M.J., "Reaction of photoluminescent porous silicon surfaces with lithium reagents to form silicon-carbon bound surface species." *Inorg. Chem.*, **1999**, *38*(7): p. 1498-503.
55. Song, J.H. and Sailor, M.J., "Chemical modification of crystalline porous silicon surfaces." *Comments Inorganic Chem.*, **1999**, *21*(1-3): p. 69-84.
56. Content, S., Trogler, W.C., and Sailor, M.J., "Detection of Nitrobenzene, DNT and TNT Vapors by Quenching of Porous Silicon Photoluminescence." *Chem. Europ. J.*, **2000**, *6*(12): p. 2205-13.
57. Gao, J., Gao, T., and Sailor, M.J., "A porous silicon vapor sensor based on laser interferometry." *Appl. Phys. Lett.*, **2000**, *77*(6): p. 901-3.
58. Létant, S. and Sailor, M.J., "Detection of HF gas with a porous Si interferometer." *Adv. Mater.*, **2000**, *12*, 355-9.
59. Létant, S.E., Content, S., Tan, T.T., Zenhausern, F., and Sailor, M.J., "Integration of Porous Silicon Chips in an Electronic Artificial Nose." *Sens. Actuators B*, **2000**, *69* (1-2), 193-198.
60. Sohn, H., Létant, S., Sailor, M.J., and Trogler, W.C., "Detection of fluorophosphonate chemical warfare agents by catalytic hydrolysis with a porous silicon interferometer." *J. Am. Chem. Soc.*, **2000**, *122*, 5399-5400. *First example showing that catalytic reactions can be coupled to the optical response from porous Si to amplify detection of chemicals. First detection of a chemical warfare agent with porous Si.*
61. Tinsley-Bown, A.M., Canham, L.T., Hollings, M., Anderson, M.H., Reeves, C.L., Cox, T.I., Nicklin, S., Squirrell, D.J., Perkins, E., Hutchinson, A., Sailor, M.J., and Wun, A., "Tuning the pore size and surface chemistry of porous silicon for immunoassays." *Phys. Status Solidi A* **2000**, *182*, 547-553.
62. Chin, V., Collins, B.E., Sailor, M.J., and Bhatia, S.N., "Compatibility of primary hepatocytes with oxidized nanoporous silicon." *Adv. Mater.* **2001**, *13*, 1877-1880.
63. Colicos, M.A., Collins, B.E., Sailor, M.J., and Goda, Y., "Hippocampal synapse remodeling induced by photoconductive silicon stimulation." *Cell* **2001**, *107*, (5), 605-616. *First example of photoelectrochemical stimulation of live cells using a photoconductive substrate (silicon) as a cellular host.*
64. Létant, S. and Sailor, M.J., "Molecular identification by time resolved interferometry in a porous silicon film." *Adv. Mat.* **2001**, *13*, 335-338.
65. Sohn, H., Calhoun, R.M., Sailor, M.J., and Trogler, W.C., "Detection of TNT and

- Picric Acid on Surfaces and in Seawater Using Photoluminescent Polysiloles." *Angew. Chem. Int. Ed.*, **2001**, 40, 2104-5. *First use of the luminescence properties of siloles as chemical sensors. Technology licensed to RedXDefense ([www.redxdefense.com](http://www.redxdefense.com)) in 2005.*
66. Canaria, C.A., Huang, M., Cho, Y., Heinrich, J.L., Lee, L.I., Shane, M.J., Smith, R.C., Sailor, M.J., and Miskelly, G.M., "The effect of surfactants on the reactivity and photophysics of luminescent nanocrystalline porous silicon." *Adv. Funct. Mater.* **2002**, 12, 495-500.
  67. Canaria, C.A., Lees, I.N., Wun, A.W., Miskelly, G.M., and Sailor, M.J., "Characterization of the carbon-silicon stretch in methylated porous silicon – observation of an anomalous isotope shift in the FTIR spectrum." *Inorg. Chem. Comm.*, **2002**, 5, 560-4.
  68. Collins, B.E., Dancil, K.-P., Abbi, G., and Sailor, M.J., "Determining protein size using an electrochemically machined pore gradient in silicon." *Adv. Funct. Mater.* **2002**, 12, 187-91.
  69. Cunin, F., Schmedake, T.A., Link, J.R., Li, Y.Y., Koh, J., Bhatia, S.N., and Sailor, M.J., "Biomolecular screening with encoded porous silicon photonic crystals." *Nature Mater.*, **2002**, 1, 39-41.
  70. Gao, J., Gao, T., Li, Y.Y., and Sailor, M.J., "Vapor Sensors Based on Optical Interferometry from Oxidized Microporous Silicon Films." *Langmuir* **2002**, 18, 2229-2233.
  71. Gao, T., Gao, J., and Sailor, M.J., "Tuning the response and stability of thin film mesoporous silicon vapor sensors by surface modification." *Langmuir* **2002**, 18, 9953-9957.
  72. Liu, R., Schmedake, T.A., Li, Y.Y., Sailor, M.J., and Fainman, Y., "Novel Porous Silicon Vapor Sensor based on Polarization Interferometry." *Sens. Actuators B*, **2002**, 87(1): p. 58-62.
  73. Mikulec, F.V., Kirtland, J.D., and Sailor, M.J., "Explosive nanocrystalline porous silicon and its use in atomic emission spectroscopy." *Adv. Mater.*, **2002**, 14: p. 38-41.
  74. Schmedake, T.A., Cunin, F., Link, J.R., and Sailor, M.J., "Standoff detection of chemicals using porous silicon "Smart Dust" particles." *Adv. Mater.* **2002**, 14, 1270-1272.
  75. Lees, I.N., Lin, H., Canaria, C.A., Gurtner, C., Sailor, M.J., and Miskelly, G.M., "Chemical Stability of Porous Silicon Surfaces Electrochemically Modified with Functional Alkyl Species." *Langmuir* **2003**, 19, 9812-9817.
  76. Li, Y.Y., Cunin, F., Link, J.R., Gao, T., Betts, R.E., Reiver, S.H., Chin, V., Bhatia, S.N., and Sailor, M.J., "Polymer Replicas of Photonic Porous Silicon For Sensing and Drug Delivery Applications." *Science* **2003**, 299, 2045-2047. *First demonstration of the use of porous Si as a template to generate nanostructured polymers. Technology licensed to Spinnaker Biosciences, inc.*
  77. Link, J.R. and Sailor, M.J., "Smart Dust: Self-assembling, self-orienting photonic



- crystals of porous Si." *Proc. Nat. Acad. Sci.*, **2003**, *100* (19), 10607-10610. *"Smart dust" paper illustrating the interplay of electrochemistry, chemistry, and optics to generate functional nanostructures from porous Si.*
78. O, B.-H., Liu, R., Li, Y.Y., Sailor, M.J., and Fainman, Y., "Vapor Sensor Realized in an Ultracompact Polarization Interferometer Built of a Freestanding Porous-Silicon Form Birefringent Film." *IEEE Photon. Tech. Lett.* **2003**, *15* (6), 834-836.
  79. Parkhutik, V., Collins, B., Sailor, M., Vstovsky, G., and Timashev, S., "Analysis of morphology of porous silicon layers using flicker noise spectroscopy." *Phys. Status Solidi A*, **2003**. 197(1): p. 88-92.
  80. Rocchia, M.A., Garrone, E., Geobaldo, F., Boarino, L., and Sailor, M.J., "Sensing CO<sub>2</sub> in a chemically modified porous silicon film." *Phys. Status Solidi A*, **2003**. 197(2): p. 365-9.
  81. Sohn, H., Sailor, M.J., Magde, D., and Trogler, W.C., "Detection of Nitroaromatic Explosives Based on Photoluminescent Polymers Containing Metalloles." *J. Am. Chem. Soc.*, **2003**. 125(13): p. 3821-30.
  82. Yoon, M.S., Ahn, K.H., Cheung, R.W., Sohn, H., Link, J.R., Cunin, F., and Sailor, M.J., "Covalent Crosslinking of 1-D Photonic Crystals of Microporous Si by Hydrosilylation and Ring-Opening Metathesis Polymerization." *Chem. Commun.* **2003**, 680-681.
  83. Anglin, E.J., Schwartz, M.P., Ng, V.P., Perelman, L.A., and Sailor, M.J., "Engineering the chemistry and nanostructure of porous silicon Fabry-Pérot films for loading and release of a steroid." *Langmuir* **2004**, *20*, 11264-11269.
  84. Dorvee, J.R., Derfus, A.M., Bhatia, S.N., and Sailor, M.J., Manipulation of liquid droplets using amphiphilic, magnetic 1-D photonic crystal chaperones. *Nature Mater.* **2004**, *3*, 896-899. *First demonstration of microfluidic "Lab on a drop" concept with porous Si. Demonstrated using magnetic porous Si microparticles to combine reagents from two separate drops to perform a controlled chemical reaction.*
  85. Lin, H., Gao, T., Fantini, J., and Sailor, M.J., "A Porous Silicon-Palladium Composite Film for Optical Interferometric Sensing of Hydrogen." *Langmuir*, **2004**. *20*: p. 5104-8.
  86. Lin, H., Mock, J., Smith, D., Gao, T., and Sailor, M.J., "Surface-Enhanced Raman Scattering from Silver-Plated Porous Silicon." *J. Phys. Chem. B*, **2004**. 108(31): p. 11654 -9.
  87. Meade, S.O., Yoon, M.S., Ahn, K.H., and Sailor, M.J., "Porous silicon photonic crystals as encoded microcarriers." *Adv. Mater.* **2004**, *16* (20), 1811-1814.
  88. O, B.H., Choi, C.H., Jo, S.B., Lee, M.W., Park, D.G., Kang, B.G., Kim, S.H., Liu, R., Li, Y.Y., Sailor, M.J., and Fainman, Y., "Novel form birefringence modeling for an ultracompact sensor in porous silicon films using polarization interferometry." *IEEE Photonics Technol. Lett.*, **2004**. 16(6): p. 1546-8.
  89. Dorvee, J. and Sailor, M.J., "A low-power sensor for volatile organic compounds based on porous silicon photonic crystals." *Phys. Status Solidi A-Appl. Mat.*, **2005**.

- 202(8): p. 1619-23.
90. Li, Y.Y., Kim, P., and Sailor, M.J., "Painting a rainbow on silicon - a simple method to generate a porous silicon band filter gradient." *Phys. Status Solidi A-Appl. Mat.*, **2005**. 202(8): p. 1616-8.
  91. Li, Y.Y., Kollengode, V.S., and Sailor, M.J., "Porous silicon/polymer nanocomposite photonic crystals by microdroplet patterning." *Adv. Mater.*, **2005**. 17(10): p. 1249-51.
  92. Pacholski, C., Sartor, M., Sailor, M.J., Cunin, F., and Miskelly, G.M., "Biosensing using porous silicon double-layer interferometers: reflective interferometric Fourier transform spectroscopy." *J. Am. Chem. Soc.*, **2005**. 127(33): p. 11636-45.
  93. Sailor, M.J. and Link, J.R., "Smart Dust: nanostructured devices in a grain of sand." *Chem. Commun.*, **2005**: p. 1375-83.
  94. Schwartz, M.P., Cunin, F., Cheung, R.W., and Sailor, M.J., "Chemical modification of silicon surfaces for biological applications." *Phys. Status Solidi A-Appl. Mat.*, **2005**. 202(8): p. 1380-4.
  95. Orosco, M. M.; Pacholski, C.; Miskelly, G. M.; Sailor, M. J., Protein-coated porous silicon photonic crystals for amplified optical detection of protease activity. *Adv. Mater.* **2006**, 18, 1393-1396.
  96. Pacholski, C.; Yu, C.; Miskelly, G. M.; Godin, D.; Sailor, M. J., Reflective Interferometric Fourier Transform Spectroscopy: A Self-Compensating Label-Free Immunosensor Using Double-layers of Porous SiO<sub>2</sub>. *J. Am. Chem. Soc.* **2006**, 128, 4250-4252.
  97. Park, J.-H.; Derfus, A. M.; Segal, E.; Vecchio, K. S.; Bhatia, S. N.; Sailor, M. J., Local Heating of Discrete Droplets Using Magnetic Porous Silicon-Based Photonic Crystals. *J. Am. Chem. Soc.* **2006**, 128 (24), 7938-7946.
  98. Salem, M. S.; Sailor, M. J.; Sakka, T.; Ogata, Y. H., Electrochemical stabilization of porous silicon multilayers for sensing various chemical compounds. *J. Appl. Phys.* **2006**, 100, 083520.
  99. Schwartz, M. P.; Derfus, A. M.; Alvarez, S. D.; Bhatia, S. N.; Sailor, M. J., The smart petri dish: A nanostructured photonic crystal for real-time monitoring of living cells. *Langmuir* **2006**, 22, 7084-7090.
  100. Thomas, J. C.; Pacholski, C.; Sailor, M. J., Delivery of Nanogram Payloads Using Magnetic Porous Silicon Microcarriers. *Lab Chip* **2006**, 6, (6), 782 - 787. *First paper simultaneously incorporating magnetic nanoparticles and biomolecular payloads in a porous Si nanostructure.*
  101. Simberg, D.; Duza, T.; Park, J. H.; Essler, M.; Pilch, J.; Zhang, L. L.; Derfus, A. M.; Yang, M.; Hoffman, R. M.; Bhatia, S.; Sailor, M. J.; Ruoslahti, E., Biomimetic amplification of nanoparticle homing to tumors. *Proc. Natl. Acad. Sci. U. S. A.* **2007**, 104, (3), 932-936.
  102. Segal, E.; Perelman, L. A.; Cunin, F.; Renzo, F. D.; Devoisselle, J.-M.; Li, Y. Y.; Sailor, M. J., Confinement of Thermoresponsive Hydrogels in Nanostructured Porous Silicon Dioxide Templates. *Adv. Funct. Mater.* **2007**, 17, 1153-1162.



103. Schwartz, M. P.; Yu, C.; Alvarez, S. D.; Migliori, B.; Godin, D.; Chao, L.; Sailor, M. J., Using an oxidized porous silicon interferometer for determination of relative protein binding affinity through non-covalent capture probe immobilization. *Phys. Status Solidi A-Appl. Mater.* **2007**, *204*, (5), 1444–1448.
104. Schwartz, M. P.; Alvarez, S. D.; Sailor, M. J., A Porous SiO<sub>2</sub> Interferometric Biosensor for Quantitative Determination of Protein Interactions: Binding of Protein A to Immunoglobulins Derived from Different Species. *Anal. Chem.* **2007**, *79*, 327–334.
105. Salem, M. S.; Sailor, M. J.; Sakka, T.; Ogata, Y. H., Electrochemical preparation of a rugate filter in silicon and its deviation from the ideal structure. *J. Appl. Phys.* **2007**, *101*, 063503.
106. Sailor, M. J., Color Me Sensitive: Amplification and Discrimination in Photonic Silicon Nanostructures. *ACS Nano* **2007**, *1*, 248-252.
107. Perelman, L. A.; Schwartz, M. P.; Wohlrab, A.; VanNieuwenhze, M. S.; Sailor, M. J., A simplified biomolecule attachment strategy for biosensing using a porous Si oxide interferometer. *Phys. Status Solidi A-Appl. Mater.* **2007**, *204*, 1394–1398.
108. Park, J. S.; Meade, S. O.; Segal, E.; Sailor, M. J., Porous silicon-based polymer replicas formed by bead patterning *Phys. Status Solidi A-Appl. Mater.* **2007**, *204*, 1383–1387.
109. Meade, S. O.; Sailor, M. J., Microfabrication of freestanding porous silicon particles containing spectral barcodes. *Phys. Status Solidi-Rapid Res. Lett.* **2007**, *1*, (2), R71-R73.
110. Maltzahn, G. v.; Min, D.-H.; Zhang, Y.; Park, J.-H.; Harris, T. J.; Sailor, M.; Bhatia, S. N., Nanoparticle Self-Assembly Directed by Antagonistic Kinase and Phosphatase Activities. *Adv. Mater.* **2007**, *19*, 3579–3583.
111. Maltzahn, G. v.; Harris, T. J.; Park, J.-H.; Schmidt, A. J.; Sailor, M. J.; Bhatia, S. N., Nanoparticle Self-Assembly Gated by Logical Proteolytic Triggers. *J. Am. Chem. Soc.* **2007**, *129*, (19), 6064-6065.
112. King, B. H.; Ruminski, A. M.; Snyder, J. L.; Sailor, M. J., Optical fiber-mounted porous silicon photonic crystals for sensing of organic vapor breakthrough in activated carbon. *Adv. Mater.* **2007**, *19*, (24), 4530 - 4534.
113. King, B. H.; Gramada, A.; Link, J. R.; Sailor, M. J., Internally Referenced Ammonia Sensor Based on an Electrochemically Prepared Porous SiO<sub>2</sub> Photonic Crystal. *Adv. Mater.* **2007**, *19*, 4044–4048.
114. Cunin, F.; Milhiet, P.-E.; Anglin, E.; Sailor, M. J.; Grimellec, C. L.; Brunel, D.; Devoisselle, J.-M., Continuous planar phospholipid bilayer supported on porous silicon thin film reflector. *Ultramicroscopy* **2007**, *107*, 1048-1052.
115. Alvarez, S. D.; Schwartz, M. P.; Migliori, B.; Rang, C. U.; Chao, L.; Sailor, M. J., Using a porous silicon photonic crystal for bacterial cell-based biosensing. *Phys. Status Solidi A-Appl. Mater.* **2007**, *204*, (5), 1439–1443.
116. Dorvee, J. R.; Sailor, M. J.; Miskelly, G. M., Digital microfluidics and delivery of molecular payloads with magnetic porous silicon chaperones. *Dalton Trans.* **2008**,

721 - 730.

117. Casanova, F.; Chiang, C. E.; Li, C.-P.; Roshchin, I. V.; Ruminski, A. M.; Sailor, M. J.; Schuller, I. K., Effect of surface interactions on the hysteresis of capillary condensation in nanopores. *Europhys. Lett.* **2008**, 81, 26003.
118. Salem, M. S.; Sailor, M. J.; Fukami, K.; Sakka, T.; Ogata, Y. H., "Sensitivity of porous silicon rugate filters for chemical vapor detection." *J. Appl. Phys.* **2008**, 103, (8), 083516.
119. Perelman, L. A.; Pacholski, C.; Li, Y. Y.; VanNieuwenzhe, M. S.; Sailor, M. J., "pH-Triggered Release of Vancomycin from Protein-Capped Porous Silicon Films." *Nanomedicine* **2008**, 3, (1), 31-43.
120. Park, J.-H.; Maltzahn, G. v.; Ruoslahti, E.; Bhatia, S. N.; Sailor, M. J., "Micellar Hybrid Nanoparticles for Simultaneous Magnetofluorescent Imaging and Drug Delivery." *Angew. Chem. Int. Ed.* **2008**, 47, (38), 7284-7288.
121. Park, J.-H.; Maltzahn, G. A. v.; Zhang, L.; Schwartz, M. P.; Bhatia, S. N.; Ruoslahti, E.; Sailor, M. J., "Magnetic Iron Oxide Nanoworms for Tumor Targeting and Imaging." *Adv. Mater.* **2008**, 20, (9), 1630-1635. *Describes the first synthesis of worm-shaped superparamagnetic iron oxide (magnetite) nanoparticles now known as "nanoworms". In a comparative study, shows that nanoworms display superior tumor targeting (both in vitro and in vivo) relative to the more well-known spherical iron oxide nanoparticles. Selected "Best work published in Advanced Materials in 2008" by the Editors. featured in MRS news (May 8, 2008), Discovery Channel (May 12, 2008), ABC news (May 13, 2008), FOX National news (with live interview, May 14, 2008), Technology Review (May 14, 2008), NCI/NIH Nanotech News (May 21, 2008), Materials Views (June, 2008), Analytical Chemistry (July 1, 2008), Popular Science (Nov, 2008) and Illustreret Videnskab (Nov, 2008); Listed as "The most accessed article" in Advanced Materials in Feb 2008 – Jan 2009; Selected for "The Best of Advanced Materials" from Jan 2008 through Jun 2009.*
122. Maltzahn, G. v.; Ren, Y.; Park, J.-H.; Min, D.-H.; Kotamraju, V. R.; Jayakumar, J.; Fogal, V.; Sailor, M. J.; Ruoslahti, E.; Bhatia, S. N., "In Vivo Tumor Cell Targeting with "Click" Nanoparticles." *Bioconjugate Chem.* **2008**, 19, (8), 1570-1578.
123. Harris, T. J.; Maltzahn, G. v.; Lord, M. E.; Park, J.-H.; Agrawal, A.; Min, D.-H.; Sailor, M. J.; Bhatia, S. N., "Protease-Triggered Unveiling of Bioactive Nanoparticles." *Small* **2008**, 4, (9), 1307-1312.
124. Cheng, L.; Anglin, E.; Cunin, F.; Kim, D.; Sailor, M. J.; Falkenstein, I.; Tammewar, A.; Freeman, W. R., "Intravitreal properties of porous silicon photonic crystals: a potential self-reporting intraocular drug delivery vehicle." *Br. J. Ophthalmol.* **2008**, 92, 705–711.
125. Casanova, F.; Chiang, C. E.; Li, C.-P.; Roshchin, I. V.; Ruminski, A. M.; Sailor, M. J.; Schuller, I. K., "Gas adsorption and capillary condensation in nanoporous alumina films." *Nanotechnology* **2008**, 19, (31), 315709.
126. Anglin, E. J.; Cheng, L.; Freeman, W. R.; Sailor, M. J., "Porous Silicon in Drug Delivery Devices and Materials." *Adv. Drug Deliv. Rev.* **2008**, 60, (11), 1266–1277.

127. Wu, E. C.; Park, J.-H.; Park, J.; Segal, E.; Cunin, F.; Sailor, M. J., Oxidation-Triggered Release of Fluorescent Molecules or Drugs from Mesoporous Si Microparticles. *ACS Nano* **2008**, 2, (11), 2401-2409. *PMCID: PMC2664163*  
*Harnesses two features unique to porous Si as a theranostic agent: (1) the semiconducting nature of porous Si quenches fluorescence from a fluorescent reporter molecule; and (2) the susceptibility of porous Si to chemical oxidation allows fluorescence to be activated in the presence of reactive oxygen species.*
128. Ruminski, A. M.; Moore, M. M.; Sailor, M. J., Humidity-Compensating Sensor for Volatile Organic Compounds using Stacked Porous Silicon Photonic Crystals. *Adv. Funct. Mater.* **2008**, 18, 3418.
129. Alvarez, S. D.; Derfus, A. M.; Schwartz, M. P.; Bhatia, S. N.; Sailor, M. J., "The compatibility of hepatocytes with chemically modified porous silicon with reference to in vitro biosensors," *Biomaterials* **2009**, 30, 26–34.
130. Wu, J.; Sailor, M. J., "Chitosan Hydrogel-Capped Porous SiO<sub>2</sub> as a pH-Responsive Nano-Valve for Triggered Release of Insulin," *Adv. Funct. Mater.* **2009**, 19, 733–741. *First incorporation of chitosan with electrochemically prepared porous SiO<sub>2</sub>.*
131. von Maltzahn, G.; Park, J. H.; Agrawal, A.; Bandaru, N. K.; Das, S. K.; Sailor, M. J.; Bhatia, S. N., "Computationally Guided Photothermal Tumor Therapy Using Long-Circulating Gold Nanorod Antennas." *Cancer Res.* **2009**, 69 (9), 3892-3900.
132. Sailor, M. J.; Wu, E. C., "Photoluminescence-Based Sensing with Porous Silicon Films, Microparticles, and Nanoparticles," *Adv. Funct. Mater.* **2009**, 19, 3195–3208. *Review article.*
133. Park, J.-H.; Maltzahn, G. v.; Zhang, L.; Derfus, A. M.; Simberg, D.; Harris, T. J.; Bhatia, S. N.; Ruoslahti, E.; Sailor, M. J., "Systematic Surface Engineering of Magnetic Nanoworms for in vivo Tumor Targeting," *Small* **2009**, 5 (6), 694-700.
134. Park, J.-H.; Gu, L.; Maltzahn, G. v.; Ruoslahti, E.; Bhatia, S. N.; Sailor, M. J., "Biodegradable luminescent porous silicon nanoparticles for in vivo applications," *Nature Mater.* **2009**, 8, 331-336. *First demonstration of silicon-based quantum dots used as imaging agents in live animals. Featured in MIT Technology Review (Feb 23, 2009), Chemical & Engineering News (Feb 24, 2009), NCI/NIH Nanotech News (Mar, 2009), Nature Mater. [8 (2009) 252-253], Discovery Channel (Mar 30, 2009), Future Oncology (Apr, 2009, 5(3) 289), Materials today (Apr 12, 2009), and NSF Discovery Article, front page of NSF website (May 4, 2009). Selected one of the ten landmark articles published in Nature Materials over the past ten years [Nature Mater. 11 (2012) 743-744]*
135. Pacholski, C.; Perelman, L. A.; VanNieuwenhze, M. S.; Sailor, M. J., "Small molecule detection by reflective interferometric Fourier transform spectroscopy (RIFTS)," *Phys. Status Sol. A* **2009**, 206 (6), 1318-1321.
136. Orosco, M. M.; Pacholski, C.; Sailor, M. J., "Real-time monitoring of enzyme activity in a mesoporous silicon double layer." *Nature Nanotech.* **2009**, 4, 255 - 258. *Demonstrated immobilization of nanogram quantities of enzyme in a 5 nL volume, and showed that the optical response can be used to quantify enzyme kinetics. The importance of this work is it demonstrated a multifunctional*

*nanostructure used to simultaneously separate and detect products of a biological reaction.*

137. Meade, S. O.; Chen, M. Y.; Sailor, M. J.; Miskelly, G. M., "Multiplexed DNA Detection Using Spectrally Encoded Porous SiO<sub>2</sub> Photonic Crystal Particles," *Anal. Chem.* **2009**, 81 (7), 2618-2625. *First example of use of spectrally encoded porous Si in a multi-analyte assay.*
138. Maltzahn, G. v.; Centrone, A.; Park, J.-H.; Ramanathan, R.; Sailor, M. J.; Hatton, T. A.; Bhatia, S. N., "SERS-Coded Gold Nanorods as a Multifunctional Platform for Densely Multiplexed Near-Infrared Imaging and Photothermal Heating," *Adv. Mater.* **2009**, 21 (31), 3175-3180.
139. Gu, L.; Orosco, M.; Sailor, M. J., "Detection of protease activity by FRET using porous silicon as an energy acceptor," *Phys. Status Sol. A* **2009**, 206 (6), 1374–1376.
140. Zhang, Y.; Yang, M.; Park, J. H.; Singelyn, J.; Ma, H. Q.; Sailor, M. J.; Ruoslahti, E.; Ozkan, M.; Ozkan, C., "A Surface-Charge Study on Cellular-Uptake Behavior of F3-Peptide-Conjugated Iron Oxide Nanoparticles." *Small* **2009**, 5 (17), 1990-1996.
141. Simberg, D.; Zhang, W. M.; Merkulov, S.; McCrae, K.; Park, J. H.; Sailor, M. J.; Ruoslahti, E., "Contact activation of kallikrein-kinin system by superparamagnetic iron oxide nanoparticles in vitro and in vivo." *J. Control. Release* **2009**, 140 (3), 301-305.
142. Simberg, D.; Park, J. H.; Karmali, P. P.; Zhang, W. M.; Merkulov, S.; McCrae, K.; Bhatia, S. N.; Sailor, M.; Ruoslahti, E., "Differential proteomics analysis of the surface heterogeneity of dextran iron oxide nanoparticles and the implications for their in vivo clearance." *Biomaterials* **2009**, 30 (23-24), 3926-3933.
143. Alvarez, S. D.; Li, C.-P.; Chiang, C. E.; Schuller, I. K.; Sailor, M. J., "A Label-Free Porous Alumina Interferometric Immunosensor." *ACS Nano* **2009**, 3 (10), 3301-3307. *First example of porous alumina used as an optical interferometric biosensor.*
144. Thompson, C. M.; Nieuwoudt, M.; Ruminski, A. M.; Sailor, M. J.; Miskelly, G. M., "Electrochemical Preparation of Pore Wall Modification Gradients across Thin Porous Silicon Layers." *Langmuir* **2010**, 26 (10), 7598-7603.
145. Sciacca, B.; Alvarez, S. D.; Geobaldo, F.; Sailor, M. J., "Bioconjugate functionalization of thermally carbonized porous silicon using a radical coupling reaction." *Dalton Trans.* **2010**, 39, 10847-10853.
146. Ruoslahti, E.; Bhatia, S. N.; Sailor, M. J., "Targeting of drugs and nanoparticles to tumors." *J. Cell Biol.* **2010**, 188 (6), 759-768.
147. Ruminski, A. M.; King, B. H.; Salonen, J.; Snyder, J. L.; Sailor, M. J., "Porous silicon-based optical microsensors for volatile organic analytes: effect of surface chemistry on stability and specificity." *Adv. Funct. Mater.* **2010**, 20, 2874–2883.
148. Perelman, L. A.; Moore, T.; Singelyn, J.; Sailor, M. J.; Segal, E., Preparation and Characterization of a pH- and Thermally Responsive Poly(N-isopropylacrylamide-coacrylic acid)/Porous SiO<sub>2</sub> Hybrid. *Adv. Funct. Mater.* **2010**, 20 (5), 826-833.

149. Park, J.-H.; Maltzahn, G. v.; Xu, M. J.; Fogal, V.; Kotamraju, V. R.; Ruoslahti, E.; Bhatia, S. N.; Sailor, M. J., "Cooperative nanomaterial system to sensitize, target, and treat tumors." *Proc Natl Acad Sci USA* **2010**, 107 (3), 981-986. *Featured in "This Week in PNAS," NCI/NIH Nanotech News (Jan, 2010), Nature Reviews Drug Discovery [Research highlight, 9 (March 2010) 194], and The Scientist (Apr 2010, volume 24, page 69).*
150. Park, J.-H.; Maltzahn, G. v.; Ong, L. L.; Centrone, A.; Hatton, T. A.; Ruoslahti, E.; Bhatia, S. N.; Sailor, M. J., "Cooperative Nanoparticles for Tumor Detection and Photothermally Triggered Drug Delivery." *Adv. Mater.* **2010**, 22, 880–885.
151. Mun, K.-S.; Alvarez, S. D.; Choi, W.-Y.; Sailor, M. J., "A Stable, Label-free Optical Interferometric Biosensor Based on TiO<sub>2</sub> Nanotube Arrays." *ACS Nano* **2010**, 4 (4), 2070-2076. *First example (based on submission date) of porous titania (or TiO<sub>2</sub> nanotubes) used as an optical interferometric biosensor.*
152. Howell, S. B.; Safaei, R.; Larson, C. A.; Sailor, M. J., "Copper transporters and the cellular pharmacology of the platinum-containing cancer drugs." *Mol. Pharm.* **2010**, 77 (6), 887-894.
153. Gu, L.; Park, J.-H.; Duong, K. H.; Ruoslahti, E.; Sailor, M. J., "Magnetic Luminescent Porous Silicon Microparticles for Localized Delivery of Molecular Drug Payloads." *Small* **2010**, 6, 2546-2552.
154. Gossuin, Y.; Disch, S.; Vuong, Q. L.; Gillis, P.; Hermann, R. I. P.; Park, J.-H.; Sailor, M. J., "NMR relaxation and magnetic properties of superparamagnetic nanoworms." *Contrast Media Mol. Imaging* **2010**, 5, 318-322.
155. Andrew, J. S.; Anglin, E. J.; Wu, E. C.; Chen, M. Y.; Cheng, L.; Freeman, W. R.; Sailor, M. J., "Sustained Release of a Monoclonal Antibody from Electrochemically Prepared Mesoporous Silicon Oxide." *Adv. Funct. Mater.* **2010**, 20, 4168–4174.
156. Agemy, L.; N., S. K.; Kotamraju, V. R.; Gujratty, K.; Girard, O. M.; Kono, Y.; Mattrey, R. F.; Park, J.-H.; Sailor, M. J.; I., J. A.; Cativiela, C.; Zanuy, D.; Sayago, F. H.; Aleman, C.; Nussinov, R.; Ruoslahti, E., "Nanoparticle-induced vascular blockade in human prostate cancer." *Blood* **2010**, 116, 2847-2856.
157. Kelly, T. L.; Gao, T.; Sailor, M. J., "Carbon and Carbon/Silicon Composites Templated in Microporous Silicon Rugate Filters for the Adsorption and Detection of Organic Vapors." *Adv. Mater.* **2011**, 23, 1776–1781.
158. Ruminski, A. M.; Barillaro, G.; Chaffin, C.; Sailor, M. J., "Internally referenced remote sensors for HF and Cl<sub>2</sub> using reactive porous silicon photonic crystals." *Adv. Funct. Mater.* **2011**, 21, 1511-1525.
159. Wu, E. C.; Andrew, J. S.; Cheng, L.; Freeman, W. R.; Pearson, L.; Sailor, M. J., "Real-time Monitoring of Sustained Drug Release using the Optical Properties of Porous Silicon Photonic Crystal Particles." *Biomaterials* **2011**, 32, 1957-1966.
160. Xiao, L.; Gu, L.; Howell, S. B.; Sailor, M. J., "Porous Silicon Nanoparticle Photosensitizers for Singlet Oxygen and Their Phototoxicity against Cancer Cells." *ACS Nano* **2011**, 5 (5), 3651–3659.
161. Wu, E. C.; Andrew, J. S.; Buyanin, A.; Kinsella, J. M.; Sailor, M. J., "Suitability of



- porous silicon microparticles for the long-term delivery of redox-active therapeutics." *Chem. Commun.* **2011**, 47, 5699–5701.
162. Thompson, C. M.; Ruminski, A. M.; Sega, A. G.; Sailor, M. J.; Miskelly, G. M., "Preparation and Characterization of Pore-Wall Modification Gradients Generated on Porous Silicon Photonic Crystals Using Diazonium Salts." *Langmuir* **2011**, 27 (14), 8967–8973.
163. Maltzahn, G. v.; Park, J.-H.; Lin, K. Y.; Singh, N.; Schwöppe, C.; Mesters, R.; Berdel, W. E.; Ruoslahti, E.; Sailor, M. J.; Bhatia, S. N., "Nanoparticles that communicate in vivo to amplify tumour targeting." *Nature Mater.* **2011**, 10, 545–552. *Featured in Nature news (Jun 19, 2011), Nature Mater. News and Views [10 (2011) 482-483], Chemical & Engineering News (Jun 27, 2011), Scientific American (Jul 8, 2011), Nature Rev. Cancer [11 (2011) 537] and The Economist (Sep 3, 2011)*
164. King, B. H.; Wong, T.; Sailor, M. J., "Detection of pure chemical vapors in a thermally cycled porous silica photonic crystal." *Langmuir* **2011**, 27 (13), 8576–8585.
165. King, B. H.; Sailor, M. J., "Medium-wavelength infrared gas sensing with electrochemically fabricated porous silicon optical rugate filters." *J. Nanophoton.* **2011**, 5, 051510.
166. Park, J. S.; Kinsella, J. M.; Jandial, D. D.; Howell, S. B.; Sailor, M. J., "Cisplatin-loaded porous Si microparticles capped by electroless deposition of platinum." *Small* **2011**, 7 (14), 2061–2069. *Shows how the redox-active nature of porous Si (as opposed to porous SiO<sub>2</sub> or most other porous drug delivery materials) can be harnessed to trap drugs in a mesoporous structure.*
167. Kinsella, J. M.; Ananda, S.; Andrew, J. S.; Grondek, J. F.; Chien, M.-P.; Scadeng, M.; Gianneschi, N. C.; Ruoslahti, E.; Sailor, M. J., "Enhanced Magnetic Resonance Contrast of Fe<sub>3</sub>O<sub>4</sub> Nanoparticles Trapped in a Porous Silicon Nanoparticle Host." *Adv. Mater.* **2011**, 23, H248–H253.
168. Kelly, T. L.; Sega, A. G.; Sailor, M. J., "Identification and Quantification of Organic Vapors by Time-Resolved Diffusion in Stacked Mesoporous Photonic Crystals." *Nano Lett.* **2011**, 11 (8), 3169–3173.
169. Chen, M. Y.; Sailor, M. J., "Charge-Gated Transport of Proteins in Nanostructured Optical Films of Mesoporous Silica." *Anal. Chem.* **2011**, 83, 7186–7193.
170. Chen, M. Y.; Klunk, M. D.; Diep, V. M.; Sailor, M. J., "Electric Field Assisted Protein Transport, Capture, and Interferometric Sensing in Carbonized Porous Silicon Films." *Adv. Mater.* **2011**, 23, 4537–4542. *First example of the use of electroadsorption to concentrate molecules in a porous Si matrix. This achievement was enabled by the development of carbonization chemistries (by Salonen and others) that yield highly stable and electrically conductive porous Si matrices.*
171. Kinsella, J. M.; Jimenez, R. E.; Karmali, P. P.; Rush, A. M.; Kotamraju, V. R.; Gianneschi, N. C.; Ruoslahti, E.; Stupack, D.; Sailor, M. J., "X-Ray Computed Tomography Imaging of Breast Cancer by using Targeted Peptide-Labeled



- Bismuth Sulfide Nanoparticles." *Angew. Chem. Int. Ed.* **2011**, *50* (51), 12308–12311.
172. Singh, N.; Karambelkar, A.; Gu, L.; Lin, K.; Miller, J. S.; Chen, C. S.; Sailor, M. J.; Bhatia, S. N., "Bioresponsive Mesoporous Silica Nanoparticles for Triggered Drug Release." *J. Am. Chem. Soc.* **2011**, *133*, 19582-19585.
  173. Karmali, P. P.; Chao, Y.; Park, J. H.; Sailor, M. J.; Ruoslahti, E.; Esener, S. C.; Simberg, D., "Different Effect of Hydrogelation on Antifouling and Circulation Properties of Dextran-Iron Oxide Nanoparticles." *Mol. Pharm.* **2012**, *9*, 539-545.
  174. Pace, S.; Seantier, B.; Belamie, E.; Lautredou, N.; Sailor, M. J.; Milhiet, P. E.; Cunin, F., "Characterization of Phospholipid Bilayer Formation on a Thin Film of Porous SiO<sub>2</sub> by Reflective Interferometric Fourier Transform Spectroscopy (RIFTS)." *Langmuir* **2012**, *28*, 6960-6969.
  175. Casanova, F.; Chiang, C. E.; Ruminski, A. M.; Sailor, M. J.; Schuller, I. K., "Controlling the Role of Nanopore Morphology in Capillary Condensation." *Langmuir* **2012**, *28*, 6832-6838.
  176. Sailor, M. J.; Park, J. H., "Hybrid Nanoparticles for Detection and Treatment of Cancer." *Adv. Mater.* **2012**, *24*, 3779-3802.
  177. Gu, L.; Ruff, L. E.; Qin, Z.; Corr, M.; Hedrick, S. M.; Sailor, M. J., "Multivalent Porous Silicon Nanoparticles Enhance the Immune Activation Potency of Agonistic CD40 Antibody." *Adv. Mater.* **2012**, *24*, 3981-3987.
  178. Liang, F. X.; Kelly, T. L.; Luo, L. B.; Li, H.; Sailor, M. J.; Li, Y. Y., "Self-Cleaning Organic Vapor Sensor Based on a Nanoporous TiO<sub>2</sub> Interferometer." *ACS Appl. Mater. Interfaces* **2012**, *4*, 4177-4183.
  179. Tan, J.; Zhao, W.-J.; Yu, J.-K.; Ma, S.; Sailor, M. J.; Wu, J.-M., "Capture, Enrichment, and Mass Spectrometric Detection of Low-Molecular-Weight Biomarkers with Nanoporous Silicon Microparticles." *Adv. Healthcare Mater.* **2012**, *1*, 742-750.
  180. Gu, L.; Fang, R. H.; Sailor, M. J.; Park, J.-H., "In Vivo Clearance and Toxicity of Monodisperse Iron Oxide Nanocrystals." *ACS Nano* **2012**, *6*, 4947-4954.
  181. Tsang, C. K.; Kelly, T. L.; Sailor, M. J.; Li, Y. Y., "Highly Stable Porous Silicon-Carbon Composites as Label-Free Optical Biosensors." *ACS Nano* **2012**, *6*, 10546-10554.
  182. Chhablani, J.; Nieto, A.; Hou, H.; Wu, E. C.; Freeman, W. R.; Sailor, M. J.; Cheng, L., "Oxidized Porous Silicon Particles Covalently Grafted with Daunorubicin as a Sustained Intraocular Drug Delivery System." *Invest Ophthalmol Vis Sci.* **2013**, *54*, 1268–1279. *Demonstrates sustained intravitreal drug release in rabbits using porous SiO<sub>2</sub> with covalently loaded daunorubicin. Notable due to lack of observable ocular toxicity.*
  183. Ruminski, A. M.; Barillaro, G.; Secret, E.; Huang, W. D.; Potocny, A.; Carion, U.; Wertans, C.; Sailor, M. J., "Topological Control of Porous Silicon Photonic Crystals by Microcontact Printing." *Adv. Opt. Mat.* **2013**, *1*, 510–516.
  184. Wu, C. C.; Sailor, M. J., "Selective Functionalization of the Internal and the

- External Surfaces of Mesoporous Silicon by Liquid Masking.” *ACS Nano* **2013**, *7*, 3158-3167.
185. Secret, E.; Maynadier, M.; Gallud, A.; Gary-Bobo, M.; Chaix, A.; Maillard, P.; Sailor, M. J.; Garcia, M.; Durand, J.-O.; Cunin, F., “Anionic porphyrin-grafted porous silicon nanoparticles for photodynamic therapy.” *Chem. Commun.* **2013**, *49*, 4202-4204.
186. Hartmann, K. I.; Nieto, A.; Wu, E. C.; Freeman, W. R.; Kim, J. S.; Chhablani, J.; Sailor, M. J.; Cheng, L. Y., “Hydrosilylated Porous Silicon Particles Function as an Intravitreal Drug Delivery System for Daunorubicin.” *J. Ocul. Pharmacol. Ther.* **2013**, *29*, 493-500.
187. Gu, L.; Hall, D. J.; Qin, Z.; Anglin, E.; Joo, J.; Mooney, D. J.; Howell, S. B.; Sailor, M. J., “In vivo time-gated fluorescence imaging with biodegradable luminescent porous silicon nanoparticles.” *Nat. Comm.* **2013**, *4*, 2326. *First example of time-gated in vivo imaging with silicon nanoparticles. Demonstrates elimination of interfering light emission from organic chromophores and tissue autofluorescence (theoretically, by > 10 orders of magnitude). Selected “Editor’s Choice” by Science magazine: Volume 341, Number 6151, Issue of 13 September 2013 <http://www.sciencemag.org/content/341/6151/twil.full>*
188. Nieto, A.; Hou, H.; Sailor, M. J.; Freeman, W. R.; Cheng, L., “Ocular silicon distribution and clearance following intravitreal injection of porous silicon microparticles.” *Exp. Eye Res.* **2013**, *116*, 161-168.
189. Leacock-Johnson, A.; Sega, A. G.; Sharief, A.; Sailor, M. J.; Miskelly, G. M., “Real-time 1D hyperspectral imaging of porous silicon-based photonic crystals with one-dimensional chemical composition gradients undergoing pore-filling-induced spectral shifts.” *Sens. Actuat. A* **2013**, *203*, 154-159.
190. Sega, A. G.; King, B. H.; Lee, J. Y.; Sailor, M. J.; Miskelly, G. M., “Thermally modulated porous silica multispectral filters and their application in remote imaging.” *ACS Nano* **2013**, *7*, 7785-7794.
191. Wu, C.-C.; Chen, M. Y.; Sailor, M. J., “Differential adsorption of small molecules in spatially functionalized porous silicon nanostructures.” *Langmuir* **2013**, *29*, 11802-11808.
192. Lo, J. H.; von Maltzahn, G.; Douglass, J.; Park, J. H.; Sailor, M. J.; Ruoslahti, E.; Bhatia, S. N., “Nanoparticle amplification via photothermal unveiling of cryptic collagen binding sites.” *J. Mater. Chem. B* **2013**, *1*, 5235-5240.
193. Qin, Z.; Joo, J.; Gu, L.; Sailor, M. J., “Size Control of Porous Silicon Nanoparticles by Electrochemical Perforation Etching.” *Part. Part. Syst. Charact.* **2014**, *31*, 252–256. *Describes an approach to prepare size-controlled nanoparticles of porous Si, by introducing “perforations” at controlled depths in a porous Si film and then subjecting it to ultrasonic fracture. Following on the work of Jarno Salonen, we found that thin layers of high porosity “perforations”, introduced in the electrochemical preparation of the film act as selective fracture planes that favor specific nanoparticle sizes. Demonstrates a twofold improvement in polydispersity and a nearly fivefold improvement in yield. This approach addresses the need for*

*high yield syntheses to reduce the overall cost of the material, which is currently of great interest for biomedical diagnostic and therapeutic applications.*

194. Qiu, H. L.; Chen, G. Y.; Fan, R. W.; Yang, L. M.; Liu, C.; Hao, S. W.; Sailor, M. J.; Agren, H.; Yang, C. H.; Prasad, P. N., "Intense ultraviolet upconversion emission from water-dispersed colloidal  $\text{YF}_3\text{:Yb}^{3+}/\text{Tm}^{3+}$  rhombic nanodisks." *Nanoscale* **2014**, 6, 753-757.
195. Li, J.; Sailor, M. J., "Synthesis and Characterization of a Stable, Label-free Optical Biosensor from  $\text{TiO}_2$ -coated Porous Silicon." *Biosens. Bioelectron.* **2014**, 55, 372-378.
196. Hou, H.; Nieto, A.; Ma, F.; Freeman, W. R.; Sailor, M. J.; Cheng, L., "Tunable sustained intravitreal drug delivery system for daunorubicin using oxidized porous silicon." *J. Control Release* **2014**, 178, 46-54.
197. Li, X.; Gu, M.; Hu, S.; Kennard, R.; Yan, P.; Chen, X.; Wang, C.; Sailor, M. J.; Zhang, J.-G.; Liu, J., "Mesoporous silicon sponge as an anti-pulverization structure for high-performance lithium-ion battery anodes." *Nat. Commun.* **2014**, 5, 4105.

*Discovery of a porous formulation of silicon that significantly improves Li-ion battery performance. For decades it has been known that silicon has 10 times the energy storage capacity of graphite as the anode of a Li-ion battery. However, development of a silicon-based Li-ion battery has been hindered by low cycle life, caused by the massive volume changes (300%) the material undergoes with each charge/discharge cycle as lithium enters and exits the fragile silicon lattice. In collaboration with Jason Zhang at the Pacific Northwest National Laboratory, we developed a mesoporous form of silicon that resulted in volume expansion during lithiation of 30% (compared to 300% volume expansion previously seen with bulk silicon), capacity of ~750 mAh/g based on total electrode weight, and > 80% capacity retention over 1000 cycles. All of these metrics were significant improvements over the state of the art for silicon at that time.*

198. Chan, D. Y.; Sega, A. G.; Lee, J. Y.; Gao, T.; Cunin, F.; Renzo, F. D.; Sailor, M. J., "Optical detection of C2 hydrocarbons ethane, ethylene, and acetylene with a photonic crystal made from carbonized porous silicon." *Inorg. Chim. Acta* **2014**, 422, 21-29.

*Although porous silicon photonic crystals have been used as optical sensors for a variety of different chemicals, the high volatility of the C2 gases make this class of analytes particularly difficult to detect. We find that this limitation can be overcome by preparing a high surface area microporous carbon infiltrate in the porous Si matrix. In the case of carbon/porous silicon composite films, the pore walls are coated with a layer of microporous glassy carbon that significantly increases the surface area for analyte adsorption.*

199. Nan, K.; Ma, F.; Hou, H.; Freeman, W. R.; Sailor, M. J.; Cheng, L., "Porous silicon oxide-PLGA composite microspheres for sustained ocular delivery of daunorubicin." *Acta Biomater.* **2014**, 10 (8), 3505-3512.
200. Wang, C.; Hou, H.; Nan, K.; Sailor, M. J.; Freeman, W. R.; Cheng, L., "Intravitreal

controlled release of dexamethasone from engineered microparticles of porous silicon dioxide." *Exp. Eye Res.* **2014**, *129*, 74-82.

201. Secret, E.; Maynadier, M.; Gallud, A.; Chaix, A.; Bouffard, E.; Gary-Bobo, M.; Marcotte, N.; Mongin, O.; El Cheikh, K.; Hugues, V.; Auffan, M.; Frochet, C.; Morere, A.; Maillard, P.; Blanchard-Desce, M.; Sailor, M. J.; Garcia, M.; Durand, J.-O.; Cunin, F., "Two-Photon Excitation of Porphyrin-Functionalized Porous Silicon Nanoparticles for Photodynamic Therapy." *Adv. Mat.* **2014**, *26* (45), 7643-7648.
- First demonstration of porous silicon nanoparticles participating in photochemical reactions via a 2-photon excitation pathway. In a demonstration of the utility of this approach, the induction of death in a breast cancer cell line was demonstrated. Photodynamic toxicity is enhanced if the nanoparticle contains an internalizing mannose targeting group, and it is further enhanced if a (2-photon inactive) porphyrin is also attached to the nanoparticle. These enhancements are a direct consequence of the size of the nanoparticles, which at ~200nm are significantly larger than most core-shell quantum dots and allow the simultaneous attachment of multiple species (such as targeting groups and a porphyrin active agent). The paper demonstrated a new phenomenon for silicon nanoparticles, and it showed several unique advantages of the nanomaterial for biological applications.*
202. Joo, J.; Cruz, J. F.; Vijayakumar, S.; Grondek, J.; Sailor, M. J., "Photoluminescent Porous Si/SiO<sub>2</sub> Core/Shell Nanoparticles Prepared by Borate Oxidation." *Adv. Funct. Mater.* **2014**, *24*, 5688. *Semiconductor nanoparticles, AKA "quantum dots", have many advantages for biomedical imaging applications such as high quantum yields and low susceptibility to photobleaching. However, translation of conventional heavy-metal-containing quantum dots has been hindered by toxicity of the cadmium or other heavy metals used in their formulations. This work describes the preparation of luminescent core-shell nanoparticles from non-toxic silicon. The "shell" in these nanoparticles is a passivating silicon oxide layer, synthesized by partial oxidation of the crystalline silicon skeleton in an aqueous solution of sodium tetraborate (borax). Control of the chemistry of the passivation layer is found to be crucial to maximize the quantum yield and to control the rate of aqueous dissolution of the resulting nanoparticles.*
203. Yersak, T. A.; Shin, J.; Wang, Z.; Estrada, D.; Whiteley, J.; Lee, S.-H.; Sailor, M. J.; Meng, Y. S., "Preparation of Mesoporous Si@PAN Electrodes for Li-Ion Batteries via the In-Situ Polymerization of PAN." *ECS Electrochem. Lett.* **2015**, *4*, A33-A36.
204. Wu, C.-C.; Hu, Y.; Miller, M.; Aroian, R. V.; Sailor, M. J., "Protection and Delivery of Anthelmintic Protein Cry5B to Nematodes Using Mesoporous Silicon Particles." *ACS Nano* **2015**, *9*, 6158-6167.
205. Nieto, A.; Hou, H.; Moon, S. W.; Sailor, M. J.; Freeman, W. R.; Cheng, L., "Surface Engineering of Porous Silicon Microparticles for Intravitreal Sustained Delivery of Rapamycin." *Invest. Ophthalmol. Vis. Sci.* **2015**, *56*, 1070-1080.
206. Joo, J.; Liu, X.; Kotamraju, V. R.; Ruoslahti, E.; Nam, Y.; Sailor, M. J., "Gated Luminescence Imaging of Silicon Nanoparticles." *ACS Nano* **2015**, *9*, 6233-6241.

*Introduced the GLISiN term describing the technique for time-gated imaging of luminescent silicon nanoparticles.*

207. Secret, E.; Wu, C.-C.; Chaix, A.; Galarneau, A.; Gonzalez, P.; Cot, D.; Sailor, M. J.; Jestin, J.; Zanotti, J.-M.; Cunin, F.; Coasne, B., "Control of the Pore Texture in Nanoporous Silicon via Chemical Dissolution." *Langmuir* **2015**, *31* (29), 8121-8128.
208. Greenawald, L. A.; Snyder, J. L.; Fry, N. L.; Sailor, M. J.; Boss, G. R.; Finklea, H. O.; Bell, S., "Development of a cobinamide-based end-of-service-life indicator for detection of hydrogen cyanide gas." *Sens. Actuators B* **2015**, *221*, 379-385.
209. Hou, H.; Huffman, K.; Rios, S.; Freeman, W. R.; Sailor, M. J.; Cheng, L., "A Novel Approach of Daunorubicin Application on Formation of Proliferative Retinopathy Using a Porous Silicon Controlled Delivery System: Pharmacodynamics." *Invest. Ophthalmol. Vis. Sci.* **2015**, *56* (4), 2755-2763.
210. Hou, H.; Nieto, A.; Belghith, A.; Nan, K.; Li, Y.; Freeman, W. R.; Sailor, M. J.; Cheng, L., "A sustained intravitreal drug delivery system with remote real time monitoring capability." *Acta Biomater.* **2015**, *24*, 309-321.
211. Wang, J.; Joo, J.; Kennard, R. M.; Lee, S.-W.; Sailor, M. J., "Thermolytic Grafting of Polystyrene to Porous Silicon." *Chem. Mater.* **2016**, *28*, 79-89.
212. Liu, X.; Braun, G. B.; Zhong, H.; Hall, D. J.; Han, W.; Qin, M.; Zhao, C.; Wang, M.; She, Z.-G.; Cao, C.; Sailor, M. J.; Stallcup, W. B.; Ruoslahti, E.; Sugahara, K. N., "Tumor-Targeted Multimodal Optical Imaging with Versatile Cadmium-Free Quantum Dots." *Adv. Func. Mater.* **2016**, *26*, 267-276.
213. Mann, A. P.; Scodeller, P.; Hussain, S.; Joo, J.; Kwon, E.; Braun, G. B.; Molder, T.; She, Z.-G.; Kotamraju, V. R.; Ranscht, B.; Krajewski, S.; Teesalu, T.; Bhatia, S.; Sailor, M. J.; Ruoslahti, E., "A peptide for targeted, systemic delivery of imaging and therapeutic compounds into acute brain injuries." *Nat. Commun.* **2016**, *7*, 11980.
214. Kim, D.; Joo, J.; Pan, Y.; Boarino, A.; Jun, Y. W.; Ahn, K. H.; Arkles, B.; Sailor, M. J., "Thermally Induced Silane Dehydrocoupling on Silicon Nanostructures." *Angew. Chem.* **2016**, *128* (22), 6533-6537.
215. Joo, J.; Kwon, E. J.; Kang, J.; Skalak, M.; Anglin, E. J.; Mann, A. P.; Ruoslahti, E.; Bhatia, S.; Sailor, M. J., "Porous Silicon-Graphene Oxide Core-Shell Nanoparticles for Targeted Delivery of siRNA to the Injured Brain." *Nanoscale Horiz.* **2016**, *1*, 407-414.
216. Joo, J.; Defforge, T.; Loni, A.; Kim, D.; Li, Z. Y.; Sailor, M. J.; Gautier, G.; Canham, L. T., "Enhanced quantum yield of photoluminescent porous silicon prepared by supercritical drying." *Appl. Phys. Lett.* **2016**, *108*, 153111.
217. Kim, T.; Braun, G. B.; She, Z.-g.; Hussain, S.; Ruoslahti, E.; Sailor, M. J., "Composite Porous Silicon-Silver Nanoparticles as Theranostic Antibacterial Agents." *ACS Appl. Mat. Interfaces* **2016**, *8*, 30449-30457.
218. Kim, D.; Baik, S. H.; Kang, S.; Cho, S. W.; Bae, J.; Cha, M.-Y.; Sailor, M. J.; Mook-



- Jung, I.; Ahn, K. H., "Close Correlation of Monoamine Oxidase Activity with Progress of Alzheimer's Disease in Mice, Observed by in Vivo Two-Photon Imaging." *ACS Cent. Sci.* **2016**, *2*, 967-975.
219. Kang, J.; Joo, J.; Kwon, E. J.; Skalak, M.; Hussain, S.; She, Z.-G.; Ruoslahti, E.; Bhatia, S. N.; Sailor, M. J., Self-Sealing Porous Silicon-Calcium Silicate Core-Shell Nanoparticles for Targeted siRNA Delivery to the Injured Brain. *Adv. Mater.* **2016**, *28*, 7962-7969.
220. Hou, H. Y.; Wang, C. Y.; Nan, K. H.; Freeman, W. R.; Sailor, M. J.; Cheng, L. Y., Controlled Release of Dexamethasone From an Intravitreal Delivery System Using Porous Silicon Dioxide. *Invest. Ophthalmol. Vis. Sci.* **2016**, *57*, 557-566.
221. Kim, D.; Zuidema, J. M.; Kang, J.; Pan, Y.; Wu, L.; Warther, D.; Arkles, B.; Sailor, M. J., "Facile Surface Modification of Hydroxylated Silicon Nanostructures Using Heterocyclic Silanes." *J. Am. Chem. Soc.* **2016**, *138*, 15106-15109.
222. Wang, J.; Lee, G. Y.; Kennard, R.; Barillaro, G.; Bisiewicz, R. H.; Cortez Lemus, N. A.; Cao, X. C.; Anglin, E. J.; Park, J. S.; Potocny, A.; Bernhard, D.; Li, J.; Sailor, M. J., "Engineering the Properties of Polymer Photonic Crystals with Mesoporous Silicon Templates." *Chem. Mater.* **2017**, *29*, 1263-1272.
223. Roberts, D. S.; Estrada, D.; Yagi, N.; Anglin, E. J.; Chan, N. A.; Sailor, M. J., "Preparation of Photoluminescent Porous Silicon Nanoparticles by High-Pressure Microfluidization." *Part. Part. Syst. Charact.* **2017**, *34* 1600326. *First use of a microfluidizer to generate nanoparticles from porous Si. Gives higher yields and better size control than the standard ultrasonication or ball-milling approaches.*
224. Kim, T.; Fu, X.; Warther, D.; Sailor, M. J., "Size-Controlled Pd Nanoparticle Catalysts Prepared by Galvanic Displacement into a Porous Si-Iron Oxide Nanoparticle Host." *ACS Nano* **2017**, *11*, 2773-2784.
225. Sailor, M. J., "Seeing the Stars in Broad Daylight: Nanotechnology Solutions To Reduce Noise in Chemical Sensing." *ACS Sens.* **2017**, *2*, 190.
226. Mao, Y. G.; Kim, D.; Joo, J.; Sailor, M. J.; Hopson, R.; Wang, L. Q., "Hyperpolarized Xe-129 nuclear magnetic resonance study of mesoporous silicon sponge materials." *J. Mater. Res.* **2017**, *32*, 3038-3045.
227. Kwon, E. J.; Skalak, M.; Bertucci, A.; Braun, G.; Ricci, F.; Ruoslahti, E.; Sailor, M. J.; Bhatia, S. N., "Porous Silicon Nanoparticle Delivery of Tandem Peptide Anti-Infectives for the Treatment of *Pseudomonas aeruginosa* Lung Infections." *Adv. Mater.* **2017**, *29*, 1701527.
228. Kim, D.; Kang, J.; Wang, T.; Ryu, H. G.; Zuidema, J. M.; Joo, J.; Kim, M.; Huh, Y.; Jung, J.; Ahn, K. H.; Kim, K. H.; Sailor, M. J., "Two-Photon In Vivo Imaging with Porous Silicon Nanoparticles." *Adv. Mater.* **2017**, *29*, 1703309. *First example of two-photon deep-tissue imaging in live animals using porous silicon nanoparticles as the contrast agent. While there are many molecular agents that give larger two-photon absorption cross sections, the pSiNPs show substantially greater photostability under two-photon excitation conditions relative to the standard 2-photon dye rhodamine 6G. Imaging was demonstrated in a live mouse tumor*



*model, using the tumor-homing peptide iRGD attached to the nanoparticles*

229. Zuidema, J. M.; Kumeria, T.; Kim, D.; Kang, J.; Wang, J.; Hollett, G.; Zhang, X.; Roberts, D. S.; Chan, N.; Dowling, C.; Blanco-Suarez, E.; Allen, N. J.; Tuszynski, M. H.; Sailor, M. J., "Oriented Nanofibrous Polymer Scaffolds Containing Protein-Loaded Porous Silicon Generated by Spray Nebulization." *Adv. Mater.* **2018**, *30*, 1706785. *Important because it demonstrated the ability to formulate sensitive protein therapeutics into common drug delivery polymers without substantial degradation of activity.*
230. Wang, J.; Kumeria, T.; Bezem, M. T.; Wang, J.; Sailor, M. J., "Self-Reporting Photoluminescent Porous Silicon Microparticles for Drug Delivery." *ACS Appl. Mat. Interfaces* **2018**, *10* (4), 3200-3209.
231. Kumeria, T.; Wang, J. N.; Chan, N.; Harris, T. J.; Sailor, M. J., "Visual Sensor for Sterilization of Polymer Fixtures Using Embedded Mesoporous Silicon Photonic Crystals." *ACS Sensors* **2018**, *3* (1), 143-150.
232. Hussain, S.; Joo, J.; Kang, J.; Kim, B.; Braun, G. B.; She, Z.-G.; Kim, D.; Mann, A. P.; Mölder, T.; Teesalu, T.; Carnazza, S.; Guglielmino, S.; Sailor, M. J.; Ruoslahti, E., "Antibiotic-loaded nanoparticles targeted to the site of infection enhance antibacterial efficacy." *Nat. Biomed. Eng.* **2018**, *2*, 95–103.
233. Moon, S. W.; Sun, Y. Y.; Warther, D.; Huffman, K.; Freeman, W. R.; Sailor, M. J.; Cheng, L. Y., "New model of proliferative vitreoretinopathy in rabbit for drug delivery and pharmacodynamic studies." *Drug Deliv.* **2018**, *25*, 600-610.
234. Lei, Y. S.; Chen, Y. M.; Gu, Y.; Wang, C. F.; Huang, Z. L.; Qian, H. L.; Nie, J. Y.; Hollett, G.; Choi, W.; Yu, Y. G.; Kim, N.; Wang, C. H.; Zhang, T. J.; Hu, H. J.; Zhang, Y. X.; Li, X. S.; Li, Y.; Shi, W. J.; Liu, Z. W.; Sailor, M. J.; Dong, L.; Lo, Y. H.; Luo, J.; Xu, S., "Controlled Homoepitaxial Growth of Hybrid Perovskites." *Adv. Mater.* **2018**, *30* (20) 1705992.
235. Kim, B.; Pang, H.-B.; Kang, J.; Park, J.-H.; Ruoslahti, E.; Sailor, M. J., "Immunogene therapy with fusogenic nanoparticles modulates macrophage response to Staphylococcus aureus." *Nat. Commun.* **2018**, *9*, 1969. *Using a nanotherapeutic to deliver siRNA that targets cells in the immune system, this paper represents the first time an siRNA therapeutic was fully effective against a lethal bacterial infection of any kind. Demonstrated on a Staph. aureus pneumonia model in mice.*
236. Jin, Y.; Kim, D.; Roh, H.; Kim, S.; Hussain, S.; Kang, J.; Pack, C.-G.; Kim, J. K.; Myung, S.-J.; Ruoslahti, E.; Sailor, M. J.; Kim, S. C.; Joo, J., "Tracking the Fate of Porous Silicon Nanoparticles Delivering a Peptide Payload by Intrinsic Photoluminescence Lifetime." *Adv. Mater.* **2018**, *30*, 1802878.
237. Kang, J.; Kim, D.; Wang, J.; Han, Y.; Zuidema, J. M.; Hariri, A.; Park, J. H.; Jokerst, J. V.; Sailor, M. J., Enhanced Performance of a Molecular Photoacoustic Imaging Agent by Encapsulation in Mesoporous Silicon Nanoparticles. *Adv. Mater.* **2018**, *30* (27), 1800512. *First example of using porous silicon nanoparticles as*

*contrast agents for photoacoustic imaging. Showed 17-fold improvement over the benchmark molecular imaging standard ICG.*

238. Mao, Y.; Kim, D.; Hopson, R.; Sailor, M. J.; Wang, L.-Q., Investigation of grafted mesoporous silicon sponge using hyperpolarized Xe-129 NMR spectroscopy. *J. Mater. Res.* **2018**, *33* (17), 2637-2645.
239. Tang, T.; Wei, Y. S.; Kang, J.; She, Z. G.; Kim, D.; Sailor, M. J.; Ruoslahti, E.; Pang, H. B., Tumor-specific macrophage targeting through recognition of retinoid X receptor beta. *J. Contr. Rel.* **2019**, *301*, 42-53.
240. Sailor, M. J., Helping Horton Hear His Whos. *ACS Sens.* **2019**, *4*, 265-266.
241. Perez, K. S.; Warther, D.; Calixto, M. E.; Mendez-Blas, A.; Sailor, M. J., Harnessing the Aqueous Chemistry of Silicon: Self-Assembling Porous Silicon/Silica Microribbons. *ACS Appl. Mater. Interfaces* **2019**, *11*, 27162-27169.
242. Kim, B.; Sun, S.; Varner, J. A.; Howell, S. B.; Ruoslahti, E.; Sailor, M. J., Securing the Payload, Finding the Cell, and Avoiding the Endosome: Peptide-Targeted, Fusogenic Porous Silicon Nanoparticles for Delivery of siRNA. *Adv. Mater.* **2019**, *31*, 1902952. *A key to advancing delivery systems for siRNA therapeutics, this paper identifies material properties required for plasma membrane fusion for more effective gene knockdown, then demonstrates broad-spectrum clinical applicability of the nanoplatform in two very different siRNA applications: (1) suppression of resistance of cancer cells to cisplatin; and (2) induction of host immunogenic activity against cancer cells.*
243. Kim, B.; Sailor, M. J., Synthesis, Functionalization, and Characterization of Fusogenic Porous Silicon Nanoparticles for Oligonucleotide Delivery. *J. Vis. Exp.* **2019**, (146) e59440.
244. Kim, B.; Park, J.-H.; Sailor, M. J., Rekindling RNAi Therapy: Materials Design Requirements for In Vivo siRNA Delivery. *Adv. Mater.* **2019**, 1903637.
245. Hollett, G.; Roberts, D. S.; Sewell, M.; Wensley, E.; Wagner, J.; Murray, W.; Krotz, A.; Toth, B.; Vijayakumar, V.; Sailor, M. J., Quantum Ensembles of Silicon Nanoparticles: Discrimination of Static and Dynamic Photoluminescence Quenching Processes. *J. Phys. Chem. C* **2019**, *123*, 17976-17986.
246. Gongalsky, M. B.; Kargina, J. V.; Cruz, J. F.; Sánchez-Royo, J. F.; Chirvony, V. S.; Osminkina, L. A.; Sailor, M. J., Formation of Si/SiO<sub>2</sub> Luminescent Quantum Dots From Mesoporous Silicon by Sodium Tetraborate/Citric Acid Oxidation Treatment. *Front. Chem.* **2019**, *7*, 165.
247. Bertucci, A.; Kim, K. H.; Kang, J.; Zuidema, J. M.; Lee, S. H.; Kwon, E. J.; Kim, D.; Howell, S. B.; Ricci, F.; Ruoslahti, E.; Jang, H. J.; Sailor, M. J., Tumor-Targeting, MicroRNA-Silencing Porous Silicon Nanoparticles for Ovarian Cancer Therapy. *ACS Appl. Mater. Interfaces* **2019**, *11*, 23926-23937.
248. Kang, R. H.; Jang, J.-E.; Huh, E.; Kang, S. J.; Ahn, D.-R.; Kang, J. S.; Sailor, M. J.; Yeo, S. G.; Oh, M. S.; Kim, D.; Kim, H. Y. A brain tumor-homing tetra-peptide delivers a nano-therapeutic for more effective treatment of a mouse model of

- glioblastoma. *Nanoscale Horiz.* **2020**, *5*, 1213-1225. DOI: 10.1039/D0NH00077A.
249. Mariani, S.; Robbiano, V.; Iglio, R.; La Mattina, A. A.; Nadimi, P.; Wang, J.; Kim, B.; Kumeria, T.; Sailor, M. J.; Barillaro, G. Moldless Printing of Silicone Lenses with Embedded Nanostructured Optical Filters. *Adv. Func. Mater.* **2020**, *30*, 1906836. DOI: 10.1002/adfm.201906836.
250. Sun, Y. Y.; Huffman, K.; Freeman, W. R.; Sailor, M. J.; Cheng, L. Y. Intravitreal safety profiles of sol-gel mesoporous silica microparticles and the degradation product (Si(OH)<sub>4</sub>). *Drug Deliv.* **2020**, *27*, 703-711. DOI: 10.1080/10717544.2020.1760401.
251. Zuidema, J. M.; Bertucci, A.; Kang, J.; Sailor, M. J.; Ricci, F. Hybrid polymer/porous silicon nanofibers for loading and sustained release of synthetic DNA-based responsive devices. *Nanoscale* **2020**, *12*, 2333-2339. DOI: 10.1039/c9nr08474f.
252. Zuidema, J. M.; Dumont, C. M.; Wang, J.; Batchelor, W. M.; Lu, Y.-S.; Kang, J.; Bertucci, A.; Ziebarth, N. M.; Shea, L. D.; Sailor, M. J. Porous Silicon Nanoparticles Embedded in Poly(lactic-co-glycolic acid) Nanofiber Scaffolds Deliver Neurotrophic Payloads to Enhance Neuronal Growth. *Adv. Func. Mater.* **2020**, *30*, 2002560. DOI: 10.1002/adfm.202002560.
253. Bezem, M. T.; Johannessen, F. G.; Kråkenes, T.-A.; Sailor, M. J.; Martinez, A. Relevance of Electrostatics for the Interaction of Tyrosine Hydroxylase with Porous Silicon Nanoparticles. *Mol. Pharmaceutics* **2021**, *18*, 976-985. DOI: 10.1021/acs.molpharmaceut.0c00960.
254. Kim, B.; Yang, Q.; Chan, L. W.; Bhatia, S. N.; Ruoslahti, E.; Sailor, M. J. Fusogenic porous silicon nanoparticles as a broad-spectrum immunotherapy against bacterial infections. *Nanoscale Horiz.* **2021**, *6*, 330-340, 10.1039/D0NH00624F. DOI: 10.1039/D0NH00624F.
255. Lu, Y. S.; Vijayakumar, S.; Chaix, A.; Pimentel, B. R.; Bentz, K. C.; Li, S.; Chan, A.; Wahl, C.; Ha, J. S.; Hunka, D. E.; Boss, G. R.; Cohen, S. M.; Sailor, M. J. Remote Detection of HCN, HF, and Nerve Agent Vapors Based on Self-Referencing, Dye-Impregnated Porous Silicon Photonic Crystals. *ACS Sens.* **2021**, *6*, 418-428. DOI: 10.1021/acssensors.0c01931.
256. Wu, Q.; Liu, C.; Tang, L. C.; Yan, Y.; Qiu, H. Y.; Pei, Y. B.; Sailor, M. J.; Wu, L. B. Stable electrically conductive, highly flame-retardant foam composites generated from reduced graphene oxide and silicone resin coatings. *Soft Matter* **2021**, *17*, 68-82. DOI: 10.1039/d0sm01540g.
257. Guo, K.; Alba, M.; Chin, G. P.; Tong, Z.; Guan, B.; Sailor, M. J.; Voelcker, N. H.; Prieto-Simón, B. Designing Electrochemical Biosensing Platforms Using Layered Carbon-Stabilized Porous Silicon Nanostructures. *ACS Appl. Mat. Interfaces* **2022**, *14*, 15565-15575. DOI: 10.1021/acсами.2c02113.
258. Jeong, M.; Jung, Y.; Yoon, J.; Kang, J.; Lee, S. H.; Back, W.; Kim, H.; Sailor, M. J.; Kim, D.; Park, J.-H. Porous Silicon-Based Nanomedicine for Simultaneous

- Management of Joint Inflammation and Bone Erosion in Rheumatoid Arthritis. *ACS Nano* **2022**, *16*, 16118-16132. DOI: 10.1021/acsnano.2c04491.
259. Kumeria, T.; Wang, J.; Kim, B.; Park, J.-H.; Zuidema, J. M.; Klempner, M.; Cavacini, L.; Wang, Y.; Sailor, M. J. Enteric Polymer-Coated Porous Silicon Nanoparticles for Site-Specific Oral Delivery of IgA Antibody. *ACS Biomater. Sci. Eng.* **2022**, *8*, 4140–4152. DOI: 10.1021/acsbiomaterials.0c01313.
260. Miao, X.; Mao, K.; Yan, Y.; Pei, Y.; Sailor, M. J.; Wu, L. Fabrication and performance of a superhydrophobic fluorine-modified porous silicon based on photocatalytic hydrosilylation. *Microporous Mesoporous Mat.* **2022**, *330*, 111561. DOI: 10.1016/j.micromeso.2021.111561.
261. Neri, M.; Kang, J.; Zuidema, J. M.; Gasparello, J.; Finotti, A.; Gambari, R.; Sailor, M. J.; Bertucci, A.; Corradini, R. Tuning the Loading and Release Properties of MicroRNA-Silencing Porous Silicon Nanoparticles by Using Chemically Diverse Peptide Nucleic Acid Payloads. *ACS Biomater. Sci. Eng.* **2022**, *8*, 4123–4131. DOI: 10.1021/acsbiomaterials.1c00431.
262. Vijayakumar, S.; Nasr, S. H.; Davis, J.; Wang, E.; Zuidema, J.; Lu, Y.-S.; Lo, Y.-H.; Sicklick, J.; Sailor, M. J.; Ray, P. Anti-KIT DNA Aptamer-conjugated Porous Silicon Nanoparticles for the Targeted Detection of Gastrointestinal Stromal Tumors. *Nanoscale* **2022**, *14*, 17700-17713. DOI: 10.1039/D2NR03905B.
263. Waggoner, L. E.; Kang, J.; Zuidema, J. M.; Vijayakumar, S.; Hurtado, A. A.; Sailor, M. J.; Kwon, E. J. Porous Silicon Nanoparticles Targeted to the Extracellular Matrix for Therapeutic Protein Delivery in Traumatic Brain Injury. *Bioconjugate Chem.* **2022**, *33*, 1685-1697. DOI: 10.1021/acs.bioconjchem.2c00305.
264. Lu, Y.-S.; Fan, R.; Vugs, W.; Biewenga, L.; Zhou, Z.; Vijayakumar, S.; Merckx, M.; Sailor, M. J. Harnessing the Materials Chemistry of Mesoporous Silicon Nanoparticles to Prepare “Armor-Clad” Enzymes. *Chem. Mater.* **2023**, *35*, 10247–10257. DOI: 10.1021/acs.chemmater.3c02637. *Sealed an active enzyme into an oxidized porous silicon cage and showed that the enzyme could still access and turn over substrate.*
265. Chaix, A.; Cueto-Diaz, E.; Dominguez-Gil, S.; Spiteri, C.; Lichon, L.; Maynadier, M.; Dumail, X.; Aggad, D.; Delalande, A.; Bessière, A.; Pichon, C.; Chiappini, C.; Sailor, M. J.; Bettache, N.; Gary-Bobo, M.; Durand, J. O.; Nguyen, C.; Cunin, F. Two-Photon Light Trigger siRNA Transfection of Cancer Cells Using Non-Toxic Porous Silicon Nanoparticles. *Adv. Healthc. Mater.* **2023**, *12*, 10. DOI: 10.1002/adhm.202301052.
266. Bakshi, S.; Pandey, P.; Mohammed, Y.; Wang, J. N.; Sailor, M. J.; Popat, A.; Parekh, H. S.; Kumeria, T. Porous silicon embedded in a thermoresponsive hydrogel for intranasal delivery of lipophilic drugs to treat rhinosinusitis. *J. Control. Release* **2023**, *363*, 452-463, DOI: 10.1016/j.jconrel.2023.09.045.
267. Vijayakumar, S.; Alberstein, R. G.; Zhang, Z.; Lu, Y.-S.; Chan, A.; Wahl, C. E.; Ha, J. S.; Hunka, D. E.; Boss, G. R.; Sailor, M. J.; Tezcan, F. A. Designed 2D protein

crystals as dynamic molecular gatekeepers for a solid-state device. *Nat. Commun.* **2024**, *15*, 6326. DOI: 10.1038/s41467-024-50567-8.

268. Lee, J.; Um, H. J.; Sailor, M. J.; Kim, J.; Jeong, H.; Kim, D. Adaptive Cavitation Ultrasonication for Large-Scale Preparation of Porous Silicon Nanoparticles. *ACS Appl. Nano Mater.* **2024**, *7*, 9460–9468. DOI: 10.1021/acsanm.4c00908.
269. Johnsen, H. M.; Hossaini Nasr, S.; De Luna, R.; Filtvedt, W.; Sailor, M. J.; Klaveness, J.; Hiorth, M. Stable “snow lantern-like” aggregates of silicon nanoparticles suitable as a drug delivery platform. *Nanoscale* **2024**, *16*, 9899-9910. DOI: 10.1039/D3NR05655D. DOI: 10.1039/D3NR05655D.

## CONFERENCE PROCEEDINGS

1. Heinrich, J.L., Curtis, C.L., Credo, G.M., Kavanagh, K.L., and Sailor, M.J., "Luminescent Colloidal Si Suspensions from Porous Si." *Mat. Res. Soc. Symp. Proc.* **1992**, *256*, 131-136.
2. Lauerhaas, J.M., Credo, G.M., Heinrich, J.L., and Sailor, M.J., "Reversible Luminescence Quenching of Porous Si by Solvents." *Mat. Res. Soc. Symp. Proc.*, 1992. *256*: p. 137-141.
3. Doan, V.V., Curtis, C.L., Credo, G.M., and Sailor, M.J., "Enhanced Luminescence and Optical Cavity Modes from Uniformly Etched Porous Silicon." *Mat. Res. Soc. Symp. Proc.*, 1993. *298*: p. 185-191.
4. Lauerhaas, J.M. and Sailor, M.J., "The Effects of Halogen Exposure on the Photoluminescence of Porous Silicon." *Mat. Res. Soc. Symp. Proc.*, 1993. *298*: p. 259-263.
5. Curtis, C.L., Credo, G.M., Ritchie, J.E., and Sailor, M.J., "Properties of Conducting Polymer Interconnects." *Mat. Res. Soc. Symp. Proc.*, 1995. *367*: p. 441-446.
6. Fisher, D.L., Gamboa, A., Harper, J., Lauerhaas, J.M., and Sailor, M.J., "Photoluminescence Quenching of Porous Silicon." *Mat. Res. Soc. Symp. Proc.*, 1995. *358*: p. 507-518.
7. Heinrich, J.L., Lee, A., and Sailor, M.J., "Porous Silicon Used as an Initiator in Polymerization Reactions." *Mat. Res. Soc. Symp. Proc.*, 1995. *358*: p. 605-610.
8. Lee, E.J., Ha, J.S., and Sailor, M.J., "Chemical Modification of the Porous Silicon Surface." *Mat. Res. Soc. Symp. Proc.*, 1995. *358*: p. 387-392.
9. Shane, M.J., Heinrich, J.L., Smith, R.C., and Sailor, M.J., "The Effects of Surfactants on the Photoluminescence of Porous Silicon." *Proc. - Electrochem. Soc.*, 1996. *95(25)*: p. 278-285.
10. Welty, R.J., Park, S.H., Asbeck, P.M., Dancil, K.-P.S., and Sailor, M.J. "Porous silicon technology for RF integrated circuit applications." *Topical Meeting on Silicon Monolithic Integrated Circuits in RF Systems*. 1998. Ann Arbor, MI, USA: IEEE.
11. Dancil, K.-P.S., Greiner, D.P., and Sailor, M.J. "Development of a Porous Silicon Based Biosensor." *Mat. Res. Soc. Symp. Proc.* **1999**. Boston, MA.

12. Salem, M. S.; Sailor, M. J.; Harraz, F. A.; Sakka, T.; Ogata, Y. H., Sensing of chemical vapor using a porous multilayer prepared from lightly doped silicon. *Phys. Status Solidi C* **2007**, *4*, (6), 2073 – 2077.
13. Pacholski, C.; Sailor, M. J., “Sensing with porous silicon double layers: A general approach for background suppression.” *Phys. Status Solidi C* **2007**, *4*, (6), 2088–2092.
14. Chen, M. Y.; Meade, S. O.; Sailor, M. J., “Preparation and analysis of porous silicon multilayers for spectral encoding applications,” *Phys. Status Sol. C* **2009**, *6* (7), 1610–1614.
15. Segal, E.; Perelman, L. A.; Moore, T.; Kesselman, E.; Sailor, M. J., “Grafting stimuli-responsive polymer brushes to freshly-etched porous silicon,” *Phys. Status Sol. C* **2009**, *6* (7), 1717–1720.
16. Salem, M. S.; Sailor, M. J.; Fukami, K.; Sakka, T.; Ogata, Y. H., “Preparation and optical properties of porous silicon rugate-type multilayers with different pore sizes.” *Phys. Status Sol. C* **2009**, *6* (7), 1620–1623.
17. Wu, C.-C.; Alvarez, S. D.; Rang, C. U.; Chao, L.; Sailor, M. J., “Label-free Optical Detection of Bacteria on a 1-D Photonic Crystal of Porous Silicon.” *Proceedings of the SPIE - The International Society for Optical Engineering* **2009**, 7167, 71670Z-71670Z-10.
18. Freeman, W. R.; Grondek, J. F.; Cavichini, M.; Warter, A.; Fan, R.; Huffman, K.; Sailor, M. J. Ophthalmic Properties of Targeted Fusogenic Nanoparticles as Therapeutic Carriers. *Investigative Ophthalmology & Visual Science* **2021**, *62*, 348-348.

## EDITORIALS AND COMMENTS

### *Not peer-reviewed*

1. Sailor, M. J. “Celebrating Our Editorial Advisory Board.” *ACS Sensors* **2020**, *5*, 3652-3652. DOI: 10.1021/acssensors.0c02447.
2. Sailor, M. J. Detect to Protect. *ACS Sensors* **2020**, *5*, 1247-1248. DOI: 10.1021/acssensors.0c00920. (1)
3. Sailor, M. J. “Computationally Enabled Sensors.” *ACS Sensors* **2021**, *6*, 1988-1989. DOI: 10.1021/acssensors.1c01189.
4. Sailor, M. J. The Future of Engineered Living Sensors – I Hope It Is Not the Thing with Feathers. *ACS Sensors* **2022**, *7*, 2795-2796. DOI: 10.1021/acssensors.2c02178.
5. Sailor, M. J., “The Three Laws of Nano-Robotics.” *ACS Sensors* **2023**, *8*, 1868-1870. DOI: 10.1021/acssensors.3c00920.
6. Sailor, M. J. A Celebration of Meetings Large and Small: A Dispatch from the 2024 Porous Semiconductors Science and Technology International Conference. *ACS Sensors* **2024**, *9*, 2703-2704. DOI: 10.1021/acssensors.4c01337.

## BOOKS AND BOOK CHAPTERS

1. Sailor, M.J., “Sensor Applications of Porous Silicon,” in *Properties of Porous*



- Silicon*, L. Canham, Editor. **1997**, Short Run Press Ltd.: London. p. 364-70.
2. Sailor, M.J., Heinrich, J.L., and Lauerhaas, J.M., "Luminescent Porous Silicon: Synthesis, Chemistry, and Applications," in *Semiconductor Nanoclusters: Physical, Chemical, and Catalytic Aspects*, P.V. Kamat and D. Meisel, Editors. **1997**, Elsevier Science B. V.: Amsterdam. p. 209-35.
  3. Cunin, F., Li, Y.Y., and Sailor, M.J., "Nanodesigned pore-containing systems for biosensing and controlled drug release," in *Encyclopedia on BioMEMS and Biomedical Nanotechnology*, S.N. Bhatia and T. Desai, Editors. **2004**, Kluwer.
  4. Cunin, F., Devoisselle, J.-M., and Sailor, M.J., "Intellegent Microparticles of Porous Silicon for the Detection of Chemical and Biological Compounds," in *Techniques de l'Ingenier*. **2006**, Techniques de l'Ingenier: Paris, Fr.
  5. Sailor, M. J., "The Advantage of Being Small: Nanotechnology," In *Letters to a Young Chemist*, Ghosh, A., Editor. **2011**, John Wiley & Sons: Hoboken.
  6. Sailor, M. J., "Porous Silicon in Practice: Preparation, Characterization, and Applications." **2012**, Wiley-VCH: Weinheim, Germany.
  7. Sailor, M. J., "Chemical Reactivity and Surface Chemistry of Porous Silicon." In *Handbook of Porous Silicon*, Canham, L. T., Ed. **2014**, Springer: Switzerland; p 355.
  8. Sailor, M. J., "Porous Silicon Nanoparticles." In *Handbook of Porous Silicon*, Canham, L. T., Ed. **2016** Springer International Publishing: Cham; p 1-11.

## ISSUED PATENTS

1. Sailor, M. J.; Doan, V. V. Photolithographic Fabrication of Luminescent Images on Porous Silicon Structures. U. S. Patent #5,318,676, **1994**.
2. Sailor, M. J.; Credo, G.; Heinrich, J.; Lauerhaas, J. M. Method for Detection of Chemicals by Reversible Quenching of Silicon Photoluminescence. U. S. Patent #5,338,415, **1994**.
3. Sailor, M. J.; Doan, V. V. Device for Detection of Organic Solvents by Silicon Photoluminescence. U. S. Patent #5,453,624, **1995**.
4. Ghadiri, M. R.; Motesharei, K.; Lin, S.-Y.; Sailor, M. J.; Dancil, K.-P. Porous semiconductor-based optical interferometric sensor. U. S. Patent #6,248,539, **2001**.
5. Ghadiri, M. R.; Sailor, M. J.; Motesharei, K.; Lin, S.-Y.; Dancil, K.-P. S. Porous semiconductor-based optical interferometric sensor. U.S. Patent #6,720,177, **2004**.
6. Chin, V. I.; Bhatia, S. N.; Sailor, M. J.; Collins, B. E. Nanoporous Silicon Support Containing Macropores for Use as a Bioreactor. U.S. Patent #6,734,000, **2004**.
7. Ghadiri, M. R.; Motesharei, K.; Lin, S.-Y.; Sailor, M. J.; Dancil, K.-P. S. Porous semiconductor-based optical interferometric sensor. US Patent #6,897,965, **2005**.
8. Sailor, M. J.; Letant, S. E. Porous thin film time-varying reflectivity analysis of samples. U.S. Patent #7,042,570, **2006**.

9. Chin, V. I.; Bhatia, S. N.; Sailor, M. J.; Collins, B. E. Method of Screening Compounds Using a Nanoporous Silicon Support Containing Macrowells for Cells. U.S. Patent #7,312,046 B2, **2007**.
10. Link, J. R.; Sailor, M. J. Photonic sensor particles and fabrication methods. U.S. Patent #7,318,903, **2008**.
11. Gao, J.; Sailor, M. J.; Bhatia, S.; Flaim, C. Direct patterning of silicon by photoelectrochemical etching. U.S. Patent #7,433,811, **2008**.
12. Sailor, M. J.; Trogler, W. C.; Sohn, H.; Calhoun, R. M. Photoluminescent polymetalloles as chemical sensors. U.S. Patent 7,482,168, **2009**.
13. Li, Y. Y.; Cunin, F.; Sailor, M. J.; Link, J. R.; Gao, T. Nanostructured casting of organic and bio-polymers in porous silicon templates. U.S. Patent #7,713,778, **2010**.
14. Dorvee, J. R.; Link, J. R.; Sailor, M. J.; Hager, H. E.; Sherman, W. D. System and method for remote, free-space optical detection of potential threat agent. U.S. Patent #7,684,043, **2010**.
15. Sailor, M. J.; Orosco, M. M.; Pacholski, C.; Miskelly, G. M. Optical sensor for detecting chemical reaction activity. U.S. Patent #7,759,129, **2010**.
16. Sailor, M. J.; King, B. H.; Ruminski, A. M.; Snyder, J. L. Optical Fiber-Mounted Porous Photonic Crystals and Sensors. U.S. Patent #7,889,954 B2, **2011**.
17. Sailor, M. J.; Schwartz, M. P.; Alvarez, S.; Bhatia, S.; Derfus, A.; Migliori, B.; Chao, L.; Li, Y. Y.; Campbell, R.; Dorvee, J.; Rang, U. C. Porous photonic crystal with light scattering domains and methods of synthesis and use thereof. U.S. Patent #7,903,239, **2011**.
18. Sailor, M.; Mikulec, F. V.; Kirtland, J. Porous Silicon-Based Explosive. U.S. Patent #7,942,989, **2011**.
19. Sailor, M. J.; Meade, S. O. "Method for forming optically encoded thin films and particles with grey scale spectra." U.S. Patent #8,308,066, **2012**.
20. Sailor, M. J.; Li, Y. Y.; Trujillo, N.; Dorvee, J. "Magnetic porous particles and method of making." U.S. Patent #8,097,173, **2012**.
21. Li, Y. Y.; Kollengode, V. S.; Sailor, M. J.; Meade, S. O. "Polymer composite photonic particles." U.S. Patent #8,206,780, **2012**.
22. Sailor, M. J.; Abbi, G.; Collins, B. E.; Dancil, K.-P. S. "Porous nanostructures and methods involving the same." U.S. Patent #8,274,643, **2012**.
23. Park, J.-H.; Derfus, A. M.; Segal, E.; Vecchio, K. S.; Bhatia, S. N.; Sailor, M. J. "Control of materials and porous magnetic particles." U.S. Patent #8,377,147 B2, **2013**.
24. Sailor, M. J.; Abbi, G.; Collins, B. E.; Dancil, K.-P. S. "Porous Nanostructures and Methods Involving the Same." US Patent #8,852,447 B2, **2014**.
25. Sailor, M. J.; Schmedake, T.; Cunin, F.; Link, J. R. "Optically Encoded Particles." U.S. Patent #8,765,484, **2014**.

26. Sailor, M. J.; Ruminski, A. M. "Porous optical sensor with fiducial marker and method for detection of analytes." U.S. Patent #8,778,690, **2014**.
27. Freeman, W.; Sailor, M. J.; Cheng, L.; Cunin, F.; Anglin, E.; Li, Y. Y. "Porous Photonic Crystals for Drug Delivery to the Eye." US Patent #8,945,602 B2, **2015**.
28. Sailor, M. J.; King, B. H.; Noda, S. "Temperature Response Sensing and Classification of Analytes with Porous Optical Films." US Patent #9,007,593 B2, **2015**.
29. Sailor, M. J.; Meade, S. O. "Optically encoded particles through porosity variation." U.S. Patent #9,181,634, **2015**.
30. Sailor, M. J.; Kelly, T. "Carbon and carbon/silicon composite nanostructured materials and casting formation method." U.S. Patent #9,499,407, **2016**.
31. Sailor, M. J.; Hedrick, S. M.; Gu, L.; Ruff, L.; Qin, Z. "Luminescent porous silicon nanoparticles for targeted delivery and immunization." U.S. Patent #9,394,369, **2016**.
32. Freeman, W. R.; Sailor, M. J.; Cheng, L. "Materials and methods for delivering compositions to selected tissues." U.S. Patent #9,241,906, **2016**.
33. Sailor, M. J.; Abbi, G.; Collins, B. E.; Dancil, K.-P. S. "Methods for in vivo drug delivery with porous nanostructures." U.S. Patent #9,555,114, **2017**.
34. Cunin, F.; Durand, J.-O.; Sailor, M. J.; Garcia, M.; Secret, E.; Gary-Bobo, M.; Maynadier, M.; Morere, A. "Functionalized porous silicon nanoparticles and use thereof in photodynamic therapy." U.S. Patent #9,694,074 B2, **2017**.
35. Pacholski, C.; Miskelly, G. M.; Sailor, M. J. "Multiple superimposed interface pattern porous microstructure multi layer biosensing method." U.S. Patent #9,909,985 B2, **2018**
36. Freeman, W. R.; Sailor, M. J.; Cheng, L. Materials and methods for delivering compositions to selected tissues. U.S. Patent #9,937,129 B2, **2018**.
37. Sailor, M. J.; Kim, B.; Kang, J. "Fusogenic liposome-coated porous silicon nanoparticles." U.S. Patent #10,702,474 B2, **2020**.
38. Freeman, W.; Sailor, M. J.; Cheng, L.; Cunin, F.; Anglin, E.; Li, Y. Y. Porous Photonic Crystals for Drug Delivery to the Eye. USA US Patent 11,241,380 B2 **2022**.
39. Sailor, M. J.; Kim, B.; Kang, J. "Fusogenic liposome-coated porous silicon nanoparticles." USA U.S. Patent #11,406,597 B2, **2022**.