Ellen M. Sletten, PhD

University of California, Los Angeles
Department of Chemistry and Biochemistry
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PROFESSIONAL EXPERIENCE

University of California, Los Angeles, Los Angeles, CA
Vice Chair for Graduate Education, 2022–present
Associate Professor, Department of Chemistry and Biochemistry, 2021–present
Assistant Professor, Department of Chemistry and Biochemistry, 2015–2021
John McTague Career Development Chair, 2015–2020
Member California NanoSystems Institute, 2016–present
Member Jonsson Comprehensive Cancer Center, 2018–present

Massachusetts Institute of Technology, Cambridge, MA
NIH Postdoctoral Fellow, 2012–2015
Advisor: Timothy M. Swager

EDUCATION

University of California, Berkeley, Berkeley, CA, PhD in Chemistry, December 2011
Dissertation title: "Bioorthogonal chemistries for labeling living systems."
Dissertation advisor: Carolyn R. Bertozzi

Stonehill College, Easton, MA, BS in Chemistry with Honors, *summa cum laude*, May 2006
Thesis title: "A flexible stereospecific synthesis of polyhydroxylated pyrrolizidines from commercially available pyranosides."
Thesis advisor: Louis J. Liotta

FELLOWSHIPS AND AWARDS

UCLA Distinguished Teaching Award, 2023
Women's Chemist Committee Rising Star Award (ACS), 2023
Agnes Fay Morgan Research Award (Iota Sigma Pi), 2022
Herbert McCoy Award, 2021
Advanced BioImaging Scialog Fellow, 2021
International Chemical Biology Society (ICBS) Young Chemical Biologist Award, 2020
Chan Zuckerberg Initiative Deep Tissue Imaging Grantee, 2020
US Delegate to European Society for Organic Chemistry Young Investigator Workshop, 2019
PMSE Young Investigator, 2019
ORGN Young Investigator Symposium Participant, 2019
NIH Director's New Innovator Award, 2018
Alfred P. Sloan Fellow in Chemistry, 2018
Mercator Fellow (German Research Foundation), 2018
Glenn T. Seaborg Award, 2018
Thieme Chemistry Journal Award, 2018
ACS-PRF New Doctoral Investigator, 2016
John McTague Career Development Chair, 2015–2020
Ruth L. Kirschstein National Research Service Award, 2012–2014
ACS Division of Organic Chemistry Graduate Fellowship, 2009–2010
NSF Graduate Research Fellowship Honorable Mention, 2006, 2007
Barry M. Goldwater Scholar, 2004–2006
NSF Research Experience for Undergraduates in Chemistry Fellow, 2005
Pfizer Summer Undergraduate Research Fellowship Recipient, 2004

PUBLICATIONS

69. Hartung, K.; **Sletten, E.M.** "Bioorthogonal chemistry: from chemistry, to biology, to medicine." *In Revision (Chem.).*
68. Meador, W.E.; Lin, E.Y.; Lim, I.; Friedman, H.C.; Ndaleh, D.; Shaik, A.K.; Hammer, N.I.; Yang, B.; Caram, J.R.; **Sletten, E.M**.; Delcamp, J.H. "Shortwave infrared absorbing and existing silicon-rosindolizine fluorophores for *in vivo* fluorescence imaging." *In Revision (Nature Chem.)*
67. Lim, I; Lin, E.Y.; Garcia, J.A.; Jia, S.; Sommerhalter, R.E.; Ghosh, S.K.; Gladysz, J.A.; **Sletten, E.M.** "Shortwave infrared fluorofluorophores for multicolor *in vivo* imaging." *Angew. Chem. Int. Ed.* **2023**, *62*, e202215200.
66. Arus, B.A.; Cosco, E.D.; Yiu, J.; Balba, I.; Bischof, T.S.; **Sletten, E.M**.; Bruns, O.T. "Shortwave infrared fluorescence imaging of peripheral organs in awake and freely moving mice." *Front. Neurosci.* **2023**, *17*, 1135494.
65. Kataki-Anastasakou, A.; Jia, S.; Axtell, J.C.: **Sletten, E.M.** "A fluorescent unnatural mannosamine derivative with enhanced emission upon complexation to cucurbit[7]uril." *Isr. J. Chem.* **2023**, *63*, e202200069.
    Invited for special issue in honor of Prof. Carolyn Bertozzi's 2022 Wolfe Prize
64. Sica, A.; Hua, A.; Lin, H.H.; **Sletten, E.M.;** Atallah, T.; Caram, J.R. "Spectrally-selective time-resolved emission through Fourier-filtering (STEF)." *J. Phys. Chem. Lett.* **2023**, *14*, 552–558.
63. Bailey, A.D.; Deshmukh, A.P.; Bradbury, N.C.; Pengshung, M.; Atallah, T.L.; Williams, J.A.; Barotov, U.; Neuhauser, D.; **Sletten, E.M.**; Caram, J.R. "Exploring the design of superradiant J-aggregates from amphiphilic monomer units." *Nanoscale*, **2023**, *15*, 3841–3849.
62. Vian, A.; Pochitaloff, M.; Yen, S.-T.; Kim, S.; Pollock, J.; Liu, Y.; **Sletten, E.M.**; Campàs, O. "*In situ* quantification of osmotic pressure within living embryonic tissues." *bioRxiv,* **2022**, DOI: 10.1101/2022.12.04.519060. *In Revision (Nature Commun.)*
61. Jia, S.; Lin, E.Y.; Lim, I.; Mobley, E.B.; Guo, L.; **Sletten, E.M.** "Water soluble chromenylium dyes for shortwave infrared imaging in mice." *ChemRxiv,* **2022**, DOI: 10.26434/chemrxiv-2022-h8rjb. *In revision (Chem.)*
60. Deshmukh, A.; Zheng, W.; Bailey, A.; Williams, J.; **Sletten, E.M.**; Egelman, E.; Caram, J.R. "Near-atomic resolution structure of J-aggregated helical light harvesting nanotubes." *ChemRxiv* **2022**, DOI: 10.26434/chemrxiv-2022-5m8sx. *Submitted.*
59. Estabrook, D.A.; Chapman, J.O.; Yen, S.-T.; Lin, H.H.; Ng, E.T.; Zhu, L., van de Wouw, H.L. Campàs, O.; **Sletten, E.M.** "Macromolecular crowding as an intracellular stimulus for responsive nanomaterials." *J. Am. Chem. Soc.* **2022**, *144*, 16792–16798.
58. Wong, K.C.Y.; **Sletten, E.M.** "Extending optical chemical tools and technologies to mice by shifting to the shortwave infrared region" *Curr. Opin. Chem. Biol.* **2022**, *68*, 102131. (review)
57. Pengshung, M.; Cosco, E.D.; Zhang, Z.; **Sletten, E.M.** "Counterion pairing effects on a flavylium heptamethine dye." *Photochem. Photobiol.* **2022**, *98*, 303–310.
56. Jia, S.; **Sletten, E.M.** "Spatiotemporal control of biology: Synthetic photochemistry toolbox with far-red and near infrared light." *ACS Chem. Biol.* **2022**, *17,* 3255–3269. (review)
    Invited as part of the Young Investigator Issue
55. Deshmukh, A.P.; Geue, N.; Bradbury, N.C.; Atallah, T.L.; Chuang, C.; Pengshung, M.; Cao, J.; **Sletten, E.M.**; Neuhauser, D.; Caram, J.R. "Bridging the gap between H- and J-aggregates: Classification and supramolecular tunability for excitonic band structures in 2-dimensional molecular aggregates." *Chem. Phys. Rev.*, **2022**, *3*, 021401.
54. Jaye, J.; **Sletten, E.M.** "Recent advances in the preparation of semifluorinated polymers." *Polymer Chem.* **2021**, *12*, 6515–6526. (review)
    Invited as part of the Early Career Investigator Issue
53. Kataki-Anastasakou, A.; Hernandez, S.; **Sletten, E.M.** "Cell-surface labeling via bioorthogonal host-guest chemistry." *ACS Chem. Biol.* **2021**, *16*, 2124–2129.
52. Day, R.A.; **Sletten, E.M.** "Experimental perspectives on assays for direct visualization of endosomal rupture." *ChemBioChem* **2021**, *22*, 3277–3282.
51. Aguado, B. *et al.* "35 challenges in materials science being tackled by PIs under 35(ish) in 2021. *Matter* **2021**, *4*, 3804–3810.
50. Friedman, H.C.; Cosco, E.D.; Atallah, T.L.; Jia, S.; **Sletten, E.M.**; Caram, J.R. "Establishing design principles for emissive organic SWIR chromophores from energy gap laws." *Chem.* **2021**, *7*, 3359–3376.
49. Shelton, E.R.; Kim, S.; Gross, B.J.; Wu, R.; Pochitaloff, M.; Lim, I.; **Sletten, E.M.**; Campàs, O. "Stress-driven tissue fluidization physically segments vertebrate somites." *bioRxiv*, **2021**, DOI: 10.1101/2021.03.27.437325.

48. Jaye, J.A.; **Sletten, E.M.** "Simple synthesis of fluorinated ene-ynes via *in situ* generation of allenes." *Synthesis*, **2021**, *53*, 4297–4307.
    Part of the special issue in honor of Prof. Sarah Reisman, 2019 Dr. Faul Women in Chemistry Award
47. Day, R.A.; **Sletten, E.M.** "Perfluorocarbon nanomaterials for photodynamic therapy." *Curr. Opin. Colloid Interface Sci.*, **2021**, *54*, 101454. (review)
    Invited as part of the Nanodroplets and Nanobubbles Issue
46. Estabrook, D.A; Day, R.A.; **Sletten, E.M.** "Redox-responsive gene delivery from perfluorocarbon nanoemulsions through cleavable poly(2-oxazoline) surfactants." *Angew. Chem. Int. Ed.* **2021**, *60*, 17362–17367.
45. Lu, S.; Rodrigues, R.M.; Huang, S.; Estabrook, D.A.; Chapman, J.O.; Guan, X.; **Sletten, E.M.;** Liu, C. "Perfluorocarbon nanoemulsions create a beneficial O_2 microenvironment in N_2-fixing biological/inorganic hybrid." *Chem. Catalysis* **2021**, *1*, 704–720.
44. Cosco, E.D.; Lim, I.; **Sletten, E.M.** "Photophysical properties of indocyanine green in the shortwave infrared region." *ChemPhotoChem*, **2021**, *5*, 727–734.
43. Lee, G.Y.; Hu, E.; Rheingold, A.L.; Houk, K.N.; **Sletten, E.M.** "Arene-perfluoroarene interactions in solution." *J. Org. Chem.* **2021**, *86*, 8425–8436.
42. Cosco, E.D.; Arus, B.; Spearman, A.I.; Atallah, T.; Leland, O.; Caram, J.R.; Bischof, T.; Bruns, O.T.; **Sletten, E.M.** "Bright chromenylium dyes as probes for multiplexed shortwave infrared *in vivo* imaging." *J. Am. Chem. Soc.* **2021**, *143*, 6836–6846.
41. Mu, X.; Hopp, M.; Dziedzic, R.M.; Rheingold, A.L.; **Sletten, E.M.**; Axtell, J.C.; Spokoyny, A.M. "Expanding the scope of palladium-catalyzed B-N cross-coupling chemistry in carboranes." *Organometallics,* **2020**, *39*, 4380–4386.
40. Kataki-Anastasakou, A.; Axtell, J.C.; Hernandez, S.; Dziedzic, R.M.; Balaich, G.J.; Rheingold, A.L.; Spokoyny, A.M.; **Sletten, E.M.** "Carborane guests for cucurbit[7]uril facilitate strong binding and on demand removal." *J. Am. Chem. Soc.* **2020**, *142*, 20513–20518.
    Highlighted: Swager, T.M.; Kottisch, V. "Making a strong binder weak." *Synfacts* **2021**, *17,* 0271.
39. Estabrook, D.A.; **Sletten, E.M.** "Printing precise materials with visible light." *ACS Cent. Sci.* **2020**, *6*, 1482–1484. (First reactions piece)
38. Lim, I.; Vian, A.; van de Wouw, H.L.; Day, R.A.; Gomez, C.; Lui, Y.; Rheingold, A.L.; Campàs, O.; **Sletten, E.M.** "Fluorous cyanine dyes for imaging perfluorocarbons in living systems." *J. Am. Chem. Soc.* **2020**, *142,* 16072–16081.
    Highlighted in *JACS* Spotlight.
    Included in the 2021 Early Career Investigator Issue of *JACS*
37. Deshmukh, A.P.; Bailey, A.D.; Forte, L.S.; Shen, C.; **Sletten, E.M.;** Caram, J.R. "Thermodynamic control over molecular aggregate assembly enables tunable excitonic properties across the visible and near-infrared." *J. Phys. Chem. Lett.* **2020**, *11*, 8026–8033.
36. Pengshung, M.; Li, J.; Mukadum, F.; Lopez, S.A.; **Sletten, E.M.** "Photophysical tuning of shortwave infrared flavylium heptamethine dyes via substituent placement." *Org. Lett.* **2020**, *22*, 6150–6154.
35. Day, R.D.; Estabrook, D.A.; Wu, C.; Chapman, J.O.; Togle, A.; **Sletten, E.M.** "Systematic study of perfluorocarbon nanoemulsions stabilized by polymer amphiphiles." *ACS App. Mater. Interfaces* **2020**, *12*, 38887–38898.
34. Cosco, E.D.; Spearman, A.L.; Ramakrishnan, S.; Lingg, J.G.P.; Saccomano, M.; Pengshung, M.; Arus, B.; Wong, K.C.Y.; Glasl, S.; Ntziachristos, V.; Warmer, M.; McLaughlin, R.R.; Bruns, O.T.; **Sletten, E.M.** "Shortwave infrared polymethine fluorophores matched to excitation lasers enable noninvasive, multicolor *in vivo* imaging in real time." *Nature Chem.* **2020,** *12,* 1123–1130.
    Highlighted in Phys.org; *Daily Bruin*; and *ChemPhotoChem* (DOI: 10.1002/cptc.202000287)
33. Miller, M.A.; **Sletten, E.M.** "Perfluorocarbons in chemical biology." *ChemBioChem* **2020**, *21*, 3451–3462. (review)
32. Pengshung, M.; Neal, P.; Atallah, T.; Kwon, J.; Caram, J.R.; Lopez, S.A.; **Sletten, E.M.** "Silicon incorporation in polymethine dyes." *Chem. Commun.* **2020**, *56*, 6110–6113.
31. Jaye, J.A.; **Sletten, E.M.** "Vinyl iodide containing polymers directly prepared via an iodo-yne polymerization." *ACS Macro Lett.* **2020**, *9*, 410–415.
30. Miller, M.A.; Day, R.D.; Estabrook, D.A.; **Sletten, E.M.** "A reduction-sensitive fluorous fluorogenic coumarin." *Synlett*, **2020**, *31*, 450–454.
    Part of the Special Section for the 11th EuCheMS Organic Division Young Investigator Workshop
29. Chen, W.; Cheng, C.-A.; Cosco, E.D.; Ramakrishnan, S.; Lingg, J.G.P.; Bruns, O.T.; Zink, J.I.; **Sletten, E.M.** "Shortwave infrared imaging with J-aggregates stabilized in hollow mesoporous silica nanoparticles." *J. Am. Chem. Soc.* **2019**, *141*, 12475–12480.

28. Jaye, J.A.; **Sletten, E.M.** "Modular and processable fluoropolymers prepared via a safe, mild, iodo-ene polymerization." *ACS Central Sci.* **2019**, *5*, 982–991.
27. Estabrook, D.A.; Ennis, A.F.; Day, R.A.; **Sletten, E.M.** "Controlling nanoemulsion surface chemistry with poly(2-oxazoline) amphiphiles." *Chem. Sci.* **2019**, *10*, 3994–4003.
26. Rodrigues, R.M.; Guan, X.; Iniguez, J.A.; Estabrook, D.A.; Chapman, J.O.; Huang, S.; **Sletten, E.M.**; Liu, C. "Perfluorocarbon nanoemulsion promotes the delivery of reducing equivalents for electricity-driven microbial CO_2 reduction." *Nature Catalysis* **2019**, *2*, 4017–4014
25. Cao, W.; **Sletten, E.M.** "Fluorescent cyanine dye J-aggregates in the fluorous phase." *J. Am. Chem. Soc.* **2018**, *140*, 2727–2730.
24. Miller, M.A.; **Sletten, E.M.** "A general approach to biocompatible branched fluorous tags for increased solubility in perfluorocarbon solvents." *Org. Lett.* **2018**, *20*, 6850–6854.
    Highlighted: Swager, T.M.; Luo, X.-X. "Some like it branched: Fluorous tags for enhanced solubility and biocompatibility." *Synfacts*, **2019**, *15*, 35.
23. Tomlin, F.M.; Gordon, C.G.; Han, Y.; Wu, T.S.; **Sletten, E.M.**; Bertozzi, C.R. "Site specific incorporation of quadricyclane into a protein and photocleavage of the quadricyclane ligation adduct." *Bioorg. Med. Chem. Lett.* **2018**, *26*, 5280–5290.
22. Day, R.A.; Estabrook. D.A.; Logan, J.K.; **Sletten, E.M.** "Fluorous photosensitizers enhance photodynamic therapy with perfluorocarbon nanoemulsions." *Chem. Commun.* **2017**, *53*, 13043–13046.
21. Cosco, E.D.; Caram, J.R.; Bruns, O.T.; Franke, D.; Day, R.A.; Farr, E.P.; Bawendi, M.G.; **Sletten, E.M.** "Flavylium polymethine fluorophores for near- and shortwave infrared imaging." *Angew. Chem. Int. Ed.* **2017**, *56*, 13126–13129.
    Highlighted: Schnermann, M.J. "Chemical biology: Organic dyes for deep bioimaging." *Nature*, **2017**, *551*, 176–177.
20. **Sletten, E.M.**; Swager, T.M. "Readily accessible multifunctional fluorous emulsions." *Chem. Sci.* **2016**, *7*, 5091–5097.
19. Niroui, F.; Wang, A.I.; **Sletten, E.M.**; Song, Y.; Kong, J.; Yablonovitch, E.; Swager, T.M.; Lang, J.H.; Bulovic, V. "Tunneling nanoelectromechanical switches based on compressible molecular thin films." *ACS Nano,* **2015**, *9*, 7886–7894.
18. Zarzar, L.D.; Sresht, V.; **Sletten, E.M.**; Kalow, J.A.; Blankschtein, D.; Swager, T.M. "Dynamically reconfigurable complex emulsions via tunable interfacial tensions." *Nature* **2015**, *518*, 520–524.
17. Koo, B.; **Sletten, E.M.**; Swager, T.M. "Efficient synthesis of functionalized poly(3-hexylthiophenes)s via lithium-bromine exchange." *Macromolecules* **2015**, *48*, 229–235.
16. **Sletten, E.M.**; Swager, T.M. "Fluorofluorophores: fluorescent fluorous chemical tools spanning the visible spectrum." *J. Am. Chem. Soc.* **2014**, *136*, 13574–13577.
15. **Sletten, E.M.**; de Almeida, G.; Bertozzi, C.R. "A homologation approach to the synthesis of difluorinated cycloalkynes." *Org. Lett.* **2014**, *16*, 1634–1637.
14. Agarwal, P.; van der Weijden, J.; **Sletten, E.M.**; Rabuka, D.; Bertozzi, C.R. "A Pictet-Spengler ligation for protein chemical modification." *Proc. Natl. Acad. Sci. U.S.A.* **2013**, *110*, 46–51.
13. Gordon, C.G.; Mackey, J.; Jewett, J.C.; **Sletten, E.M.**; Houk, K.N.; Bertozzi, C.R. "Reactivity of biarylazacyclooctynones in copper-free click chemistry." *J. Am. Chem. Soc.* **2012**, *134*, 9199–9208.
12. Yao, J.Z.; Uttamapinant, C.; Poloukhtine, A.; Baskin, J.M.; Codelli, J.A.; **Sletten, E.M.**; Bertozzi, C.R.; Popik, V.V.; Ting, A,Y. "Fluorophore targeting to cellular proteins via enzyme-mediated azide ligation and strain-promoted cycloaddition." *J. Am. Chem. Soc.* **2012**, *134*, 3720–3728.
11. de Almeida, G.; **Sletten, E.M.**; Nakamura, H.; Palaniappan, K.K.; Bertozzi, C.R. "Thiacycloalkynes for Cu-free click chemistry." *Angew. Chem. Int. Ed.* **2012**, *51*, 2443–2447.
10. **Sletten, E.M.**; Bertozzi, C.R. "A bioorthogonal quadricyclane ligation." *J. Am. Chem. Soc.* **2011**, *133*, 17570–17573.
9. **Sletten, E.M.**; Bertozzi, C.R. "From mechanism to mouse: a tale of two bioorthogonal reactions." *Acc. Chem. Res.* **2011**, *44*, 666–676.
8. Kelly, C.B.; Colthart, A.M.; Constant, B.D.; Corning, S.R.; Dubois, L.N.; Genovese, J.T.; Radziewicz, J.L.; **Sletten, E.M.**; Whitaker, K.R.; Tilley, L.J. "Enabling the synthesis of perfluoroalkyl bicyclobutanes via 1,3 γ-silyl elimination." *Org. Lett.* **2011**, *13*, 1646–1649.
7. **Sletten, E.M.**; Nakamura, H.; Jewett, J.C.; Bertozzi, C.R. "Difluorobenzocyclooctyne: synthesis, characterization, and stabilization by β-cyclodextrin." *J. Am. Chem. Soc.* **2010**, *132*, 11799–11805.
6. Chang, P.V.; Dube, D.H.; **Sletten, E.M.**; Bertozzi, C.R. "A strategy for the selective imaging of glycans using caged metabolic precursors." *J. Am. Chem. Soc.* **2010**, *132*, 9516–9518.
5. Jewett, J.C.; **Sletten, E.M.**; Bertozzi, C.R. "Rapid Cu-free click chemistry with readily synthesized biarylazacyclooctynones." *J. Am. Chem. Soc.* **2010**, *132*, 3688–3690.

4. Chang, P.V.*; Prescher, J.A.*; **Sletten, E.M.**; Baskin, J.M.; Miller, I.A.; Agard, N.J.; Lo, A.; Bertozzi, C.R. "Copper-free click chemistry in living animals." *Proc. Natl. Acad. Sci. U.S.A.* **2010**, *107*, 1821–1826.
3. **Sletten, E.M.**; Bertozzi, C.R. "Bioorthogonal chemistry: fishing for selectivity in a sea of functionality." *Angew. Chem. Int. Ed.* **2009**, *48*, 6974–6998.
2. **Sletten, E.M.**; Bertozzi, C.R. "A hydrophilic azacyclooctyne for Cu-free click chemistry." *Org. Lett.* **2008**, *10*, 3097–3099.
1. **Sletten, E.M.**; Liotta, L.J. "A flexible stereospecific synthesis of polyhydroxyated pyrrolizidines from commercially available pyranosides." *J. Org. Chem.* **2006**, *71*, 1335–1343.

PATENTS

17. **Sletten, E.M.;** Shang, J.; Pengshung, M.; Garcia, C.A.; van de Wouw, H.L. "Water-soluble heterocycle polymethine chromophores." Filed **2022**.
16. **Sletten, E.M.;** Estabrook, D.A.; Chapman, J.O. "Compositions and methods for cellular delivery." Filed **2019**.
15. Bruns, O.T.; Cosco, E.D.; Lingg, J.P.; Warmer, M.; Ramakrishnan, S.; Saccomano, M, **Sletten, E.M.** "System and method for real-time multicolor shortwave infrared fluorescence imaging." Filed **2019**. US Provisional: 62/858,440.
14. Bruns, O.T.; Lingg, J.P.; Fuenzalida-Werner, J.P.; Stiel, A.; Warmer, M.; Ramakrishnan, S.; Cosco, E.D.; **Sletten, E.M.** "Method and device for imaging fluorescent proteins in near- and short-wave infrared" Filed **2019**. US Provisional: 62/858,461.
13. **Sletten, E.M**.; Cosco, E.D. "Heterocyclyl polymethine IR chromophores." Filed **2018**. WO2018226720A1.
12. **Sletten, E.M.**; Jaye, J. "Tunable linear fluoropolymers." Filed **2017**. WO2019099884A1..
11. **Sletten, E.M**.; Cosco, E.D. "Heterocyclyl polymethine IR chromophores." Filed **2017**. WO2018201000A1.
10. **Sletten, E.M.**; Pengshung, M. "Disulfide bioconjugation" Filed **2017.** WO2018201000A1
9. **Sletten, E.M.**; Caram, J.; Swager, T.M. "Near and shortwave infrared polymethine dyes." Filed **2017.** WO2018187295A1.
8. Lang, J.H.; Swager, T.M.; Bulovic, V.; Niroui, F.; **Sletten, E.M.** "Tunneling nanoelectromechanical switches and tunable plasmonic nanogaps" Filed **2015**. US95556195B2.
7. Swager, T.M.; Blankschtein, E.D; Zarzar, L.D.; Sresht, V.; **Sletten, E.M.**; Kalow, J.A. "Compositions and methods for arranging colloid phases." Filed **2015**, WO2016070027 A1.
6. Swager, T.M.; Blankschtein, E.D; Zarzar, L.D.; Sresht, V.; **Sletten, E.M.**; Kalow, J.A. "Compositions and methods for forming emulsions." Filed **2015**, WO2016070016 A1.
5. Bulović, V.; Lang, J.H.; Lee, H.S.; Swager, T.M.; Andrew, T.L.; D'Asaro, M.E.; Deotare, P.; Muraka, A.; Niroui, F.; **Sletten, E.M.**; Wang, A.I. "Electromechanical device." Filed **2014**, WO2014117161 A8.
4. Bertozzi, C.R.; Agarwal, P.; **Sletten, E.M.** "Pictet-Spengler ligation for protein chemical modification." Filed **2013**, US Patent: W02014078733 A1.
3. **Sletten, E.M.**; Bertozzi, C.R. "Compositions and methods for quadricyclane modification of biomolecules." Filed **2012**, US Patent: US20130244267 A1.
2. Jewett, J.C.; **Sletten, E.M.**; Bertozzi, C.R. "Compositions and methods for modification of biomolecules." Filed **2010**, US Patent: US8519122 B2.
1. Bertozzi, C.R.; Agard, N.J.; Prescher, J.A.; Baskin, J.M.; **Sletten, E.M.** "Compositions and methods for modification of biomolecules." Filed **2008**, US Patent: US8431558 B2.

PRESENTATIONS (INDEPENDENT CAREER, E.M. SLETTEN PRESENTING ONLY)

77. **Sletten, E.M.** "Harnessing the orthogonality of fluorine for advanced materials." National Cancer Institute, Molecular Design Seminar Series, Frederick, MD, December 1, 2022. (oral, invited)
76. **Sletten, E.M.** "Exploring Fluoro: Fluorine and fluorescence in chemical biology." New Jersey ACS Award for Creativity in Synthesis and Molecular Design Symposium, November 15, 2022 (oral, invited).
75. **Sletten, E.M.** "Bioorthogonal complexation for labeling living systems." Tufts University, November 2, 2022. (oral, invited)
74. **Sletten, E.M.** "Bioorthogonal complexation for labeling living systems." University of Michigan, Novartis symposium, October 18, 2022. (oral, invited)
73. **Sletten, E.M.** "Bioorthogonal complexation for labeling living systems." Sonoma State University, October 7, 2022. (oral, invited, Zoom)

72. **Sletten, E.M.** "Multiplexed *in vivo* imaging with near and shortwave infrared polymethine fluorophores." University of Notre Dame, September 12, 2022. (oral, invited).
71. **Sletten, E.M.** "Chromenylium fluorophores for *in vivo* imaging." *International Society for Heterocycle Chemistry*, Santa Barbara, CA, September 1, 2022 (oral, invited).
70. **Sletten, E.M.** "Bioorthogonal complexation for labeling living systems." University of California, Los Angeles, Seaborg Symposium, August 17, 2022 (oral, invited).
69. **Sletten, E.M.** "Exploring Fluoro: Fluorine and fluorescence in chemical biology." University of San Diego, March 3, 2022. (oral, invited, in person!).
68. **Sletten, E.M. "**Multiplexed *in vivo* imaging with near and shortwave infrared polymethine fluorophores." University of Ottawa, February 2, 2022. (oral, invited, Zoom)
67. **Sletten, E.M.** "Non-invasive shortwave infrared imaging in mice." Advanced Imaging Methods Meeting, January 20, 2022 (oral, invited, Zoom).
66. **Sletten, E.M.** "Real time multiplexed imaging in living animals." Pacifichem, December 16, 2021 (oral, invited, Zoom)
65. **Sletten, E.M. "**Multiplexed *in vivo* imaging with near and shortwave infrared polymethine fluorophores." Dartmouth College, October 7, 2021 (oral, invited, Zoom)
64. **Sletten, E.M.** "Multicolor *in vivo* imaging with polymethine fluorophores." IUPAC/CCCE Meeting, August 19, 2021 (oral, invited, virtual)
63. **Sletten, E.M.** Multiplexed *in vivo* imaging with near and shortwave infrared polymethine fluorophores." Lawrence Berkeley National Laboratory, June 16, 2021 (oral, invited, Zoom)
62. **Sletten, E.M.** Multiplexed *in vivo* imaging with near and shortwave infrared polymethine fluorophores." Oregon Health Sciences University, May 4, 2021 (oral, invited, Zoom)
61. **Sletten, E.M.** "Multiplexed *in vivo* imaging with near and shortwave infrared polymethine fluorophores." EPFL, Lausanne, Switzerland, April 6, 2021 (oral, invited, Zoom)
60. **Sletten, E.M.** "Multiplexed *in vivo* imaging with near and shortwave infrared polymethine fluorophores." University of California, Irvine, March 31, 2021 (oral, invited, Zoom)
59. **Sletten, E.M.** "Multiplexed *in vivo* imaging with near and shortwave infrared polymethine fluorophores." Cancer Molecular Imaging, Nanotechnology, and Theranostics Seminar, UCLA, February 16, 2021 (oral, invited, Zoom)
58. **Sletten, E.M.** "Multiplexed *in vivo* imaging with near and shortwave infrared polymethine fluorophores." Cornell University, February 8, 2021 (oral, invited, Zoom)
57. **Sletten, E.M.** "Multiplexed *in vivo* imaging with near and shortwave infrared polymethine fluorophores." University of Florida, February 4, 2021 (oral, invited, Zoom)
56. **Sletten, E.M.** "Multiplexed *in vivo* imaging with near and shortwave infrared polymethine fluorophores." University of Mississippi, January 28, 2021 (oral, invited, Zoom)
55. **Sletten, E.M.** "Multiplexed *in vivo* imaging with near and shortwave infrared polymethine fluorophores." Dalhousie University, January 22, 2021 (oral, invited, Zoom)
54. **Sletten, E.M.** "Multiplexed *in vivo* imaging with near and shortwave infrared polymethine fluorophores." University of Oregon, January 15, 2021 (oral, invited, Zoom)
53. **Sletten, E.M.** "Multicolor, high resolution, non-invasive imaging in mice." International Chemical Biology Society Meeting, November 13, 2020. (oral, invited, award address, Zoom)
52. **Sletten, E.M.** "Polymethine fluorophores for *in vivo* shortwave infrared imaging." Texas A&M University, College Station, TX, November 12, 2020. (oral, invited, Zoom)
51. **Sletten, E.M.** "Versatile perfluorocarbon nanoemulsions stabilized by poly(2-oxazoline) amphiphiles." University of California, Irvine, MA, November 11, 2020. (oral, invited, Zoom)
50. **Sletten, E.M.** "Polymethine fluorophores for *in vivo* shortwave infrared imaging." Harvard University, Cambridge, MA, November 5, 2020. (oral, invited, Zoom)
49. **Sletten, E.M.** "Multiplexed *in vivo* imaging with near and shortwave infrared polymethine fluorophores." Boston College, October 21, 2020. (oral, invited, Zoom)
48. **Sletten, E.M.** "Exploring fluoro: Five years of the Sletten Group." University of California, Los Angeles, CA, October 15, 2020. (oral, promotion talk, Zoom)
47. **Sletten, E.M.** "Multiplexed *in vivo* imaging with near and shortwave infrared polymethine fluorophores." Stanford University, Palo Alto, CA, September 30, 2020. (oral, invited, Zoom)
46. **Sletten, E.M.** "Multicolor, high-resolution, non-invasive imaging in animals." Chemists Live Event, September 25, 2020. (oral, invited, ACS BIOL online event)
45. **Sletten, E.M.** "Polymethine fluorophores for *in vivo* shortwave infrared imaging." University of Minnesota, Minneapolis, MN, September 24, 2020. (oral, invited, Dow lecture, Zoom)
44. **Sletten, E.M.** "Polymethine dyes for the shortwave infrared region of the electromagnetic spectrum." Cyanine Day, September 21, 2020. (oral, organizer, 1 day international Zoom meeting)

43. **Sletten, E.M.** "Multiplexed *in vivo* imaging with near and shortwave infrared polymethine fluorophores." California Institute of Technology, Pasadena, CA, September 15, 2020. (oral, invited, Zoom)
42. **Sletten, E.M.** "Polymethine fluorophores for *in vivo* shortwave infrared imaging." University of Delaware, Newark, DE, September 4, 2020. (oral, invited, Zoom)
41. **Sletten, E.M.** "Polymethine fluorophores for *in vivo* shortwave infrared imaging." University of California, Berkeley, Berkeley, CA, September 1, 2020. (oral, invited, Zoom)
40. **Sletten, E.M.** "Polymethine fluorophores for *in vivo* shortwave infrared imaging." Princeton University, Princeton, NJ, March 5, 2020. (oral, invited)
39. **Sletten, E.M.** "Polymethine fluorophores for *in vivo* shortwave infrared imaging." University of North Carolina, Chapel Hill, NC, February 20, 2020. (oral, invited)
38. **Sletten, E.M.** "Polymethine fluorophores for *in vivo* shortwave infrared imaging." University of Washington, Seattle, WA, February 6, 2020. (oral, invited)
37. **Sletten, E.M.** "Beyond the NIR: in vivo imaging with molecules and materials that emit above 1000 nm" University of Arizona, Tucson, AZ, September 12, 2019. (oral, invited)
36. **Sletten, E.M.** "Flavylium polymethine fluorophores for imaging in the shortwave infrared region." 258th ACS National Meeting, San Diego, CA, August 27, 2019. (oral, invited)
35. **Sletten, E.M.** "Versatile perfluorocarbon nanotheranostics stabilized by poly(2-oxazoline) amphiphiles." 258th ACS National Meeting, San Diego, CA, August 27, 2019. (oral, invited)
34. **Sletten, E.M.** "Fluorous ponytails, polymers, and assemblies." International Symposium on Fluorous Technologies, Shanghai, China, August 9, 2019. (oral, invited)
33. **Sletten, E.M.** "Multiplexed in vivo imaging with shortwave infrared fluorophores." Photochemistry Gordon Research Conference, Stonehill College, Easton, MA, July 15, 2019. (oral, invited)
32. **Sletten, E.M.** "Multiplexed in vivo imaging with shortwave infrared fluorophores." European Society of Organic Chemistry Young Investigator Workshop, Vienna, Austria, July 12, 2019. (oral, invited, 1 of 2 US delegates)
31. **Sletten, E.M.** "Beyond the NIR: *in vivo* imaging with molecules and materials that emit above 1000 nm." Helmholtz Pioneer Campus, Munich, Germany, July 8, 2019. (oral, invited)
30. **Sletten, E.M.** "Multiplexed in vivo imaging with shortwave infrared fluorophores." GreAter Los Angeles Chemical Biology Day, University of Southern California, June, 21, 2019. (oral, invited)
29. **Sletten, E.M.** "Multiplexed in vivo imaging with shortwave infrared fluorophores." Bioorganic Gordon Research Conference, Proctor Academy, Andover, NH, June, 10, 2019. (oral, invited)
28. **Sletten, E.M.** "Multifunctional perfluorocarbon therapeutics." California Polytechnic Institute, San Luis Obispo, CA, May 17, 2019. (oral, invited)
27. **Sletten, E.M.** "Beyond the near-infrared: Biocompatible contrast agents for shortwave infrared imaging." University of Illinois, Urbana-Champaign, March 7, 2019. (oral, invited)
26. **Sletten, E.M.** "Perfluorocarbon nanoemulsion therapeutics and diagnostics." 12th Annual International Symposium on Nanobiotechnology. Singapore, Singapore, February 38, 2019. (oral, invited)
25. **Sletten, E.M.** "Versatile perfluorocarbon nanotherapeutics." University of California, Los Angeles, February 21, 2019. (oral, invited)
24. **Sletten, E.M.** "Perfluorocarbon nanoemulsion theranostics." Jonsson Comprehensive Cancer Center, University of California, Los Angeles, February 7, 2019. (oral, invited)
23. **Sletten, E.M.** "Beyond the NIR: Polymethine fluorophores for shortwave infrared imaging." Kharasch Mini Symposium, University of Chicago, February 4, 2019. (oral, invited)
22. **Sletten, E.M.** "Flavylium polymethine fluorophores for imaging in the shortwave infrared." Advanced Imaging Methods Workshop, Berkeley, CA, January 31, 2019. (oral, invited)
21. **Sletten, E.M.** "Flavylium polymethine fluorophores for imaging in the shortwave infrared region." American Society for Cell Biology National Meeting, San Diego, CA, December 9, 2018. (oral, invited)
20. **Sletten, E.M.** "Enhancing therapeutics and diagnostics with fluorine." Truman State University, November 16, 2018. (oral, student invited)
19. **Sletten, E.M.** "Versatile perfluorocarbon nanotheranostics." University of California, Santa Barbara, November 13, 2018. (oral, invited)
18. **Sletten, E.M.** "Versatile perfluorocarbon nanotheranostics." University of California, Los Angeles, November 6, 2018. (oral, promotion talk)
17. **Sletten, E.M.** "Flavylium polymethine fluorophores for imaging in the shortwave infrared region." ProbeFest 2018, Janelia Research Campus, Ashburn, VA, October 12, 2018. (oral, invited)
16. **Sletten, E.M.** "Shortwave infrared fluorophores for illuminating biological processes." International Chemical Biology Symposium, Vancouver, Canada, September 27, 2018. (oral)

15. **Sletten, E.M.** "Perfluorocarbon nanoemulsion theranostics stabilized by poly(oxazoline) amphiphiles." Polymers in Medicine and Biology, Napa, CA, September 11, 2018. (oral, invited)
14. **Sletten, E.M.** "Perfluorocarbon-based nanotheranostics." 256th ACS National Meeting, Boston, MA, August 22, 2018. (oral, invited)
13. **Sletten, E.M.** "Flavylium heptamethine fluorophores for shortwave infrared imaging." 256th ACS National Meeting, Boston, MA, August 20, 2018. (oral)
12. **Sletten, E.M.** "Responsive fluorous polymeric materials." 256th ACS National Meeting, Boston, MA, August 19, 2018. (oral)
11. Estabrook, D.A.; Ennis, A.F.; **Sletten, E.M.** "Custom poly(oxazoline)surfactants for the stabilization of perfluorocarbon nanoemulsions." Bioinspired Materials Gordon Research Conference, Les Diablerets, CH, June 28, 2018. (poster)
10. Cosco, E.D.; Caram, J.R.; Bruns, O.T.; Franke, D.; McLaughlin, R.R.; Bawendi, M.G.; **Sletten, E.M.** "Flavylium polymethine fluorophores for shortwave infrared imaging." Bioorganic Gordon Research Conference, Andover, NH, June 14, 2018. (poster)
9. **Sletten, E.M.**; Day, R.; Estabrook, D.; Cosco, E.; McLaughlin, R.; Logan, J. "Perfluorocarbon nanoemulsions for imaging and phototherapy." Biennial Meeting American Society for Photobiology, Tampa, FL, May 13, 2018. (invited, oral)
8. **Sletten, E.M.** "Enhancing therapeutics and diagnostics with fluorine." Seaborg Award Banquet, Los Angeles, CA, May 5, 2018. (award address, oral)
7. **Sletten, E.M.** "Perfluorocarbon nanoemulsions for photomedicine." Claremont College, Claremont, CA, November 14, 2017. (invited, oral)
6. **Sletten, E.M.** "Enhancing therapeutics and diagnostics with fluorine." Oberlin College, Oberlin, OH, October 4, 2017. (invited, oral)
5. Day, R.A.; Estabrook, D.A.; **Sletten, E.M.** "Exploiting the fluorous phase to readily access multifunctional nanoemulsions." 254th ACS National Meeting, Washington, DC, August 23, 2017. (invited, oral)
4. **Sletten, E.M.** Day, R.A.; Estabrook, D.A.; Gietzelt, J.M. "Perfluorocarbon nanoemulsions for photomedicine." International Symposium on Fluorous Technologies, Boston, MA, August 9, 2017. (invited, oral)
3. Estabrook, D.A.; **Sletten, E.M.** "Custom poly(oxazoline) surfactants for the stabilization of perfluorocarbon nanoemulsions." Polymer Chemistry Gordon Research Conference, South Hadley, MA, June 2017. (poster)
2. **Sletten, E.M.** "Enhancing nanotherapeutics with fluorine." California State University, Los Angeles, November 29, 2016. (invited, oral)
1. Cosco, E.D.; Caram, J.; Bruns, O.T.; Swager, T.M.; Bawendi, M, **Sletten, E.M.** "New cyanine dyes for imaging in the NIR and SWIR." Bioorganic Gordon Research Conference, Andover, NH, June 2016. (poster)

FUNDING (PI or CO-PI; DIRECT COSTS TO SLETETN GROUP INDICATED)

11. NSF (CHE-12236719), "Engineering cyanine aggregation and self-assembly to access exceptionally red-shifted organic chromophores," 2022–2025, $210,000, Co-PI Caram, (renewal)
10. Chan Zuckerberg Initiative Deep Tissue Imaging, "Deep tissue shortwave infrared stimulated emission microscopy," 2021–2023, $242,500, Co-PIs Bruns, Rowlands
9. NIGMS (R01GM135380), "Robust microdroplet based mechanical probes for wide-ranging mechanobiology applications," 2019–2023, $372,000, Co-PIs Campàs, Zink
8. NSF (CHE-1905242), "Engineering cyanine aggregation and self-assembly to access exceptionally red-shifted organic chromophores," 2019–2022, $160,000, Co-PI Caram
7. NIH Innovator Award (DP2GM132680), "Bioorthogonal host-guest chemistry for tandem imaging and therapy," 2018–2023, $1,500,000
6. NIBIB (R01EB027172), "Biocompatible fluorophores for shortwave infrared imaging," 2018–2023, $900,000
5. UC Hellman Award, "A general carrier for biotherapeutics," 2018–2019, $24,800
4. Sloan Foundation, "Exploiting the orthogonality of fluorine to control and detect chemistry *in vivo,*" 2018–2020, $65,000
3. UC Cancer Research Coordinating Committee, "Enhanced Gemcitabine delivery with fluorous polymer micelles." 2017–2018, $55,000
2. ACS Petroleum Research Fund, "Desulfurization of crude oil by fluorous extraction," 2016–2018, $110,000
1. UCLA, Faculty Research Grant, "The development of bioorthogonal complexation," 2016–2017, $5,000

SERVICE AND OUTREACH

Created a "PHOTONbooth" to teach young students about fluorescence, 2017–present
Discussion leader at Gordon Research Conferences, 2018 (Bioorganic; Bioinspired materials)
Member of mentoring panel at Bioinsipred Materials Gordon Research Seminar, 2018
Session chair at conferences (ACS National Meetings, International Symposium on Fluorous Technologies, Polymers in Medicine and Biology, ProbeFest, 2017–2019)
Ad-hoc reviewer for NSF, ACS PRF, NIH SCBA, CZI, 2017–present
External review for NCI Chemical Biology Laboratory, 2022
Co-organizer of Cyanine Day, 1 day international meeting, 2020, 2022
Research mentor for Santa Monica Community College students, 2016–2019
Research mentor for student from historically black colleges and universities, 2018
Editorial advisory board for: *Angew. Chem. Int. Ed., Polymer Chem., Macromolecules, Chem. Commun., ChemPhotoChem*
Reviewer for: *ACS Nano, ACS Central Science, Chem*, *Nature Commun., Proc. Natl. Acad. Sci. U.S.A.*, *Chem. Commun. Tetrahedron Rev., Angew. Chem. Int. Ed., J. Am. Chem. Soc.*, *Bioconjugate Chem.*, *Macromolecules, Eur. J. Org. Chem., ACS Macro Letters, ChemBioChem , Chem. Sci., Nature Chem.*
Contributor to *Synfacts*, 2012–2013