

# Charles L. Cooney

Professor Emeritus

## Selected Publications

- Couto, Daniela S., Luis Perez-Breva, and Charles L. Cooney. 2012. "Regenerative Medicine: Learning from Past Examples." *Tissue Engineering. Part A* 18 (21–22): 2386–93. <https://doi.org/10.1089/ten.TEA.2011.0639>.
- Mascia, Salvatore, Patrick L. Heider, Haitao Zhang, Richard Lakerveld, Brahim Benyahia, Paul I. Barton, Richard D. Braatz, et al. 2013. "End-to-End Continuous Manufacturing of Pharmaceuticals: Integrated Synthesis, Purification, and Final Dosage Formation." *Angewandte Chemie International Edition* 52 (47): 12359–63. <https://doi.org/10.1002/anie.201305429>.
- Weil, Henry Birdseye, Vikalp Pal Sabhlok, and Charles L. Cooney. 2014. "The Dynamics of Innovation Ecosystems: A Case Study of the US Biofuel Market." *Energy Strategy Reviews* 3 (C): 88–99. <https://doi.org/10.1016/j.esr.2014.07.005>.
- Konstantinov, Konstantin B., and Charles L. Cooney. 2015. "White Paper on Continuous Bioprocessing May 20–21 2014 Continuous Manufacturing Symposium." *Journal of Pharmaceutical Sciences* 104 (3): 813–20. <https://doi.org/10.1002/jps.24268>.
- Allison, Gretchen, Yanxi Tan Cain, Charles Cooney, Tom Garcia, Tara Gooen Bizjak, Oyvind Holte, Nirdosh Jagota, et al. 2015. "Regulatory and Quality Considerations for Continuous Manufacturing May 20–21, 2014 Continuous Manufacturing Symposium." *Journal of Pharmaceutical Sciences* 104 (3): 803–12. <https://doi.org/10.1002/jps.24324>.
- Croughan, Matthew S., Konstantin B. Konstantinov, and Charles Cooney. 2015. "The Future of Industrial Bioprocessing: Batch or Continuous?" *Biotechnology and Bioengineering* 112 (4): 648–51. <https://doi.org/10.1002/bit.25529>.
- Stewart, S. R., P. W. Barone, A. Bellisario, C. L. Cooney, P. A. Sharp, A. J. Sinskey, S. Natesan, and S. L. Springs. 2016. "Leveraging Industry-Academia Collaborations in Adaptive Biomedical Innovation." *Clinical Pharmacology & Therapeutics* 100 (6): 647–53. <https://doi.org/10.1002/cpt.504>.
- Ibáñez-González, María J., Tania Mazzuca-Sobczuk, Rosa M. Redondo-Miranda, Emilio Molina-Grima, and Charles L. Cooney. 2016. "A Novel Vortex Flow Reactor for the Purification of B-Phycoerythrin from *Porphyridium Cruentum*." *Chemical Engineering Research and Design* 111 (July): 24–33. <https://doi.org/10.1016/j.cherd.2016.03.032>.
- Nasr, Moheb M., Markus Krumme, Yoshihiro Matsuda, Bernhardt L. Trout, Clive Badman, Salvatore Mascia, Charles L. Cooney, et al. 2017. "Regulatory Perspectives on Continuous Pharmaceutical Manufacturing: Moving from Theory to Practice: September 26-27, 2016, International Symposium on the Continuous Manufacturing of Pharmaceuticals." In *Journal of Pharmaceutical Sciences*, 106:3199–3206. Elsevier B.V. <https://doi.org/10.1016/j.xphs.2017.06.015>.
- Badman, Clive, Charles L. Cooney, Alastair Florence, Konstantin Konstantinov, Markus Krumme, Salvatore Mascia, Moheb Nasr, and Bernhardt L. Trout. 2019. "Why We Need Continuous

Pharmaceutical Manufacturing and How to Make It Happen.” *Journal of Pharmaceutical Sciences* 108 (11): 3521–23. <https://doi.org/10.1016/j.xphs.2019.07.016>.

## Books

- Olsen, Alfred C., and Charles L. Cooney, eds. 1973. *Immobilized Enzymes in Food and Microbial Processes*. New York: Plenum Press.
- Wang, Daniel I. C., Charles L. Cooney, Arnold L. Demain, Peter Dunnill, Arthur E. Humphrey, and Malcolm D. Lilly., eds. 1979. *Fermentation and Enzyme Technology*. New York: John Wiley & Sons.
- Cooney, Charles L., A. E. Humphrey, and Murray Moo-Young, eds. 1985. *Comprehensive Biotechnology: The Principles, Applications, and Regulations of Biotechnology in Industry, Agriculture, and Medicine*. Vol. 2. Oxford: Pergamon Press.
- Cooney, Charles L., and D. I. C. Wang, eds. 1986. *Chemical Engineering Communications, Special Edition Honoring A.E. Humphrey*. Vol. 45.
- Heinzle, Elmar., Arno P. Biber, and Charles L. Cooney. 2006. *Development of Sustainable Bioprocesses: Modeling and Assessment*. John Wiley & Sons.

## Major Reports

- The Biomass Panel of the Energy Research Advisory Board. 1983. “Biomass Energy.” *Solar Energy*. Pergamon. [https://doi.org/10.1016/0038-092X\(83\)90002-6](https://doi.org/10.1016/0038-092X(83)90002-6).
- National Research Council. 1983. *Underutilized Resources as Animal Feedstuffs*. Underutilized Resources as Animal Feedstuffs. National Academies Press. <https://doi.org/10.17226/41>.
- National Research Council. 1989. *Opportunities in Biology*. Opportunities in Biology. National Academies Press. <https://doi.org/10.17226/742>.

## Publications

- Cooney, C. L., D. I. C. Wang, and R. I. Mateles. 1969. “Measurement of Heat Evolution and Correlation with Oxygen Consumption during Microbial Growth.” *Biotechnology and Bioengineering* 11 (3): 269–81. <https://doi.org/10.1002/bit.260110302>.
- Cooney, Charles L. 1970. “Double Nutritional Deficiencies in Continuous Microbial Culture.” Massachusetts Institute of Technology. PhD Thesis
- Cooney, Charles L., and Daniel I. C. Wang. 1971. “Oxygen Transfer and Control.” *Biotechnology and Bioengineering Symposium 2*: 63–75.
- Demain, A. L., and C. L. Cooney. 1972. “Continuous Culture-1971.” *Process Biochemistry* 7 (7): 21–23.
- Cooney, Charles L., and David W. Levine. 1972. “Microbial Utilization of Methanol.” *Advances in Applied Microbiology* 15 (C): 337–65. [https://doi.org/10.1016/S0065-2164\(08\)70096-0](https://doi.org/10.1016/S0065-2164(08)70096-0).
- Acevedo, F., and C. L. Cooney. 1973. “Penicillin Amidase Production by *Bacillus Megaterium*.” *Biotechnology and Bioengineering* 15 (3): 493–503. <https://doi.org/10.1002/bit.260150306>.
- Levine, D. W., and C. L. Cooney. 1973. “Isolation and Characterization of a Thermotolerant Methanol-Utilizing Yeast.” *Applied Microbiology* 26 (6): 982–90. <https://doi.org/10.1128/AEM.26.6.982-990.1973>.

- Cooney, Charles L., and John Hueter. 1974. "Enzyme Catalysis in the Presence of Nonaqueous Solvents Using Chloroperoxidase." *Biotechnology and Bioengineering* 16 (8): 1045–53.  
<https://doi.org/10.1002/bit.260160805>.
- White, G. E., C. L. Cooney, A. J. Sinskey, and S. A. Miller. 1974. "An *In Vitro* Assay to Measure Early Calcium Loss from Surface Enamel." *Journal of Dental Research* 53 (2): 481–85.  
<https://doi.org/10.1177/00220345740530025101>.
- Hamilton, Bruce K., Clark K. Colton, and Charles L. Cooney. 1974. "Glucose Isomerase: A Case Study of Enzyme-Catalyzed Process Technology." In *Immobilized Enzymes in Food and Microbial Processes*, edited by Alfred Olson and C. L. Cooney, 85–131. Springer US.  
[https://doi.org/10.1007/978-1-4684-2088-3\\_7](https://doi.org/10.1007/978-1-4684-2088-3_7).
- Cooney, C. L., J. C. Weaver, S. R. Tannebaum, D. V. Faller, A. Shields, and M. Jahnke. 1974. "The Thermal Enzyme Probe — A Novel Approach to Chemical Analysis." In *Enzyme Engineering Volume 2*, edited by E. Kendall Pye and Lemuel B. Wingard, 411–17. Boston: Springer.  
[https://doi.org/10.1007/978-1-4615-8897-9\\_58](https://doi.org/10.1007/978-1-4615-8897-9_58).
- White, G. E., C. L. Cooney, A. J. Sinskey, and S. A. Miller. 1974. "A Defined Continuous Culture Medium for *Streptococcus Mutans*." *Journal of Dental Research* 53 (3): 762–762.  
<https://doi.org/10.1177/00220345740530034201>.
- Snedecor, Bradley, and Charles L. Cooney. 1974. "Thermophilic Mixed Culture of Bacteria Utilizing Methanol for Growth'." *Applied Microbiology*. Vol. 27.
- Acevedo, F., and C. L. Cooney. 1975. "Penicillin Amidase and Penicillinase Production in Nitrogen- and Sulfur-Limited Chemostats." *European Journal of Applied Microbiology and Biotechnology* 2 (1): 9–17. <https://doi.org/10.1007/BF01385441>.
- Cooney, Charles L., and Roy A. Ackerman. 1975. "Thermophilic Anaerobic Digestion of Cellulosic Waste." *European Journal of Applied Microbiology and Biotechnology* 2 (1): 65–72.  
<https://doi.org/10.1007/BF01385447>.
- Cooney, Charles L., and Donald L. Wise. 1975. "Thermophilic Anaerobic Digestion of Solid Waste for Fuel Gas Production." *Biotechnology and Bioengineering* 17 (8): 1119–35.  
<https://doi.org/10.1002/bit.260170804>.
- Cooney, C. L., and D. W. Levine. 1975. "Yeast Production from Methanol as a Source of Single-Cell Protein." In *Single-Cell Protein II*, edited by Steven R. Tannenbaum and Daniel I. C. Wang, 402–23. Cambridge, MA: M.I.T. Press.
- Cooney, C. L., and S. R. Tannenbaum. 1975. "Variation of Composition of Bacteria and Yeast and Its Significance to Single-Cell Protein Production." In *International Biological Programme Synthesis: Food Protein Sources*, edited by N. W. Pirie, 4:223–32. London: Cambridge University Press.
- Mou, Duen-Gang, and Charles L. Cooney. 1976. "Application of Dynamic Calorimetry for Monitoring Fermentation Processes." *Biotechnology and Bioengineering* 18 (10): 1371–92.  
<https://doi.org/10.1002/bit.260181005>.
- Koplove, H. Michael, and Charles L. Cooney. 1976. "A Continuous Assay for an Intracellular Enzyme: The Analysis of Acetate Kinase in *Escherichia Coli*." *Analytical Biochemistry* 72 (1–2): 297–304.  
[https://doi.org/10.1016/0003-2697\(76\)90533-9](https://doi.org/10.1016/0003-2697(76)90533-9).

- Matteo, C. C., C. L. Cooney, and A. L. Demain. 1976. "Production of Gramicidin S Synthetases by *Bacillus Brevis* in Continuous Culture." *Journal of General Microbiology* 96 (2): 415–22. <https://doi.org/10.1099/00221287-96-2-415>.
- White, G. E., C. L. Cooney, A. J. Sinskey, and S. A. Miller. 1976. "Continuous Culture Studies on the Growth and Physiology of *Streptococcus Mutans*." *Journal of Dental Research* 55 (2): 239–43. <https://doi.org/10.1177/00220345760550021301>.
- Cooney, C. L., D. I. C. Wang, and R. I. Mateles. 1976. "Growth of *Enterobacter Aerogenes* in a Chemostat with Double Nutrient Limitations." *Applied and Environmental Microbiology* 31 (1): 91–98. <https://doi.org/10.1128/AEM.31.1.91-98.1976>.
- Troiano, R. A., D. L. Wise, D. C. Augenstein, R. G. Kispert, and C. L. Cooney. 1976. "Fuel Gas Production by Anaerobic Digestion of Kelp." *Resource Recovery and Conservation* 2 (2): 171–76. [https://doi.org/10.1016/0304-3967\(76\)90007-X](https://doi.org/10.1016/0304-3967(76)90007-X).
- Augenstein, D. C., D. L. Wise, R. L. Wentworth, and C. L. Cooney. 1976. "Fuel Gas Recovery from Controlled Landfilling of Municipal Wastes." *Resource Recovery and Conservation* 2 (2): 103–17. [https://doi.org/10.1016/0304-3967\(76\)90002-0](https://doi.org/10.1016/0304-3967(76)90002-0).
- Cooney, Charles L., and Daniel I. C. Wang. 1976. "Transient Response of *Enterobacter Aerogenes* under a Dual Nutrient Limitation in a Chemostat." *Biotechnology and Bioengineering* 18 (2): 189–98. <https://doi.org/10.1002/bit.260180205>.
- Weaver, James C., Charles L. Cooney, Scott P. Fulton, Peter Schuler, and Steven R. Tannenbaum. 1976. "Experiments and Calculations Concerning a Thermal Enzyme Probe." *Biochimica et Biophysica Acta (BBA) - Enzymology* 452 (2): 285–91. [https://doi.org/10.1016/0005-2744\(76\)90178-9](https://doi.org/10.1016/0005-2744(76)90178-9).
- Montville, T. J., C. L. Cooney, and A. J. Sinskey. 1977. "Distribution of Dextranase in *Streptococcus Mutans* and Observations on the Effect of Soluble Dextran on Dextranase Activities." *Infection and Immunity* 18 (3): 629–35. <https://pubmed.ncbi.nlm.nih.gov/591060/>.
- Cooney, C. L., B. R. Snedecor, D. W. Levine, R. A. Ackerman, and J. Lee. 1977. "Thermophilic Processes for the Production and Utilization of C-1 Compounds." In *Developments in Industrial Microbiology: A Publication of the Society for Industrial Microbiology*, 18:255–66. Society for Industrial Microbiology.
- Cooney, C. L., and N. Makiguchi. 1977. "Assessment of Single Cell Protein from Methanol-Grown Yeast." In *Biotechnology and Bioengineering Symposium*. Vol. 19. Mexico City. <https://www.osti.gov/biblio/5373180-assessment-single-cell-protein-from-methanol-grown-yeast>.
- Cooney, C. L., J. Leung, and A. J. Sinskey. 1977. "Growth and Physiology of *Streptococcus Mutans* during Transients in Continuous Culture." *Microbiology Abstracts, Section A* 12: 799–808.
- Cooney, C. L., and F. Acevedo. 1977. "Theoretical Conversion Yields for Penicillin Synthesis." *Biotechnology and Bioengineering* 19 (10): 1449–62. <https://doi.org/10.1002/bit.260191004>.
- Cooney, Charles L. 1977. "Chemical Sources of Food: An Approach to Novel Food Sources." In *Environmental Chemistry*, edited by J. Bockris, 53–94. Springer US. [https://doi.org/10.1007/978-1-4615-6921-3\\_4](https://doi.org/10.1007/978-1-4615-6921-3_4).
- Montville, T. J., C. L. Cooney, and A. J. Sinskey. 1977. "Measurement and Synthesis of Insoluble and Soluble Dextran by *Streptococcus Mutans*." *Journal of Dental Research* 56 (8): 983–89. <https://doi.org/10.1177/00220345770560082701>.

- Cooney, Charles L., Henry Y. Wang, and Daniel I. C. Wang. 1977. "Computer-Aided Material Balancing for Prediction of Fermentation Parameters." *Biotechnology and Bioengineering* 19 (1): 55–67. <https://doi.org/10.1002/bit.260190106>.
- Wang, Henry Y., Charles L. Cooney, and Daniel I. C. Wang. 1977. "Computer-Aided Baker's Yeast Fermentations." *Biotechnology and Bioengineering* 19 (1): 69–86. <https://doi.org/10.1002/bit.260190107>.
- Wise, D. L., R. L. Wentworth, D. C. Augenstein, and C. L. Cooney. 1978. "Multi-Stage Digestion of Municipal Solid Waste to Fuel Gas." *Resource Recovery and Conservation* 3 (1): 41–59. [https://doi.org/10.1016/0304-3967\(78\)90029-X](https://doi.org/10.1016/0304-3967(78)90029-X).
- Wang, D. I. C., C. L. Cooney, A. L. Demain, R. F. Gomez, and A. J. Sinskey. 1978. "Degradation of Cellulosic Biomass and Its Subsequent Utilization for the Production of Chemical Feedstocks. Progress Report, September 1-November 30, 1978." <https://doi.org/10.2172/5843634>.
- Wang, D. I. C., C. L. Cooney, S. D. Wang, J. Gordon, and G. Y. Wang. 1978. "Anaerobic Biomass Degradation to Produce Sugars, Fuels and Chemicals." In *Proceedings of the Second Annual Symposium on Fuels from Biomass. Rensselaer Polytechnic Institute*, 537–47. New York.
- Weaver, J. C., F. M. Reames, L. DeAlleaume, C. R. Perley, and C. L. Cooney. 1978. "Continuous Measurements on Immobilized Cells by a Mass Filter." In *Enzyme Engineering*, 403–4. Springer US. [https://doi.org/10.1007/978-1-4684-6985-1\\_81](https://doi.org/10.1007/978-1-4684-6985-1_81).
- Cooney, C. L., D. I. C. Wang, S. D. Wang, J. Gordon, and M. Jiminez. 1978. "Simultaneous Cellulose Hydrolysis and Ethanol Production by a Cellulolytic Anaerobic Bacterium." *Biotechnology and Bioengineering Symposium* 8: 103–14. <https://www.osti.gov/biblio/5858742-simultaneous-cellulose-hydrolysis-ethanol-production-cellulolytic-anaerobic-bacterium>.
- Wang, H., D. I. C. Wang, and C. L. Cooney. 1978. "The Application of Dynamic Calorimetry for Monitoring Growth of *Saccharomyces Cerevisiae*." *European Journal of Applied Microbiology and Biotechnology* 5 (3): 207–14. <https://doi.org/10.1007/BF00579341>.
- Wise, D. L., C. L. Cooney, and D. C. Augenstein. 1978. "Biomethanation: Anaerobic Fermentation of CO<sub>2</sub>, H<sub>2</sub> and CO to Methane." *Biotechnology and Bioengineering* 20 (8): 1153–72. <https://doi.org/10.1002/bit.260200804>.
- Montville, Thomas J., Charles L. Cooney, and Anthony J. Sinskey. 1978. "*Streptococcus Mutans* Dextranucrase: A Review." *Advances in Applied Microbiology* 24 (C): 55–84. [https://doi.org/10.1016/S0065-2164\(08\)70636-1](https://doi.org/10.1016/S0065-2164(08)70636-1).
- Baratti, J., R. Couderc, C. L. Cooney, and D. I. C. Wang. 1978. "Preparation and Properties of Immobilized Methanol Oxidase." *Biotechnology and Bioengineering* 20 (3): 333–48. <https://doi.org/10.1002/bit.260200303>.
- Swartz, J. R., and Charles L. Cooney. 1978. "Indirect Fermentation Measurements as a Basis for Control." *Biotechnology and Bioengineering Symposium* 9: 95–102.
- Cooney, C. L., J. C. Weaver, S. P. Fulton, and S. R. Tannenbaum. 1978. "Studies on the Thermal Enzyme Probe." In *Enzyme Engineering*, 3:431–36. Springer US. [https://doi.org/10.1007/978-1-4757-5163-5\\_48](https://doi.org/10.1007/978-1-4757-5163-5_48).
- Gordon, J., M. Jiminez, C. L. Cooney, and D. I. C. Wang. 1978. "Sugar Accumulation during Enzyme Hydrolysis and Fermentation of Cellulose." *AIChE Symposium Series*. <https://www.osti.gov/biblio/5843596>.

- Koplove, H. M., and C. L. Cooney. 1978. "Acetate Kinase Production by *Escherichia Coli* During Steady-State and Transient Growth in Continuous Culture." *Journal of Bacteriology* 134 (3): 992–1001. <https://doi.org/10.1128/jb.134.3.992-1001.1978>.
- Koplove, H. Michael, and Charles L. Cooney. 1979. "Enzyme Production during Transient Growth." In *Advances in Biomedical Engineering*, 1–40. Berlin. [https://doi.org/10.1007/3540092625\\_6](https://doi.org/10.1007/3540092625_6).
- Cooney, Charles L. 1979. "Conversion Yields in Penicillin Production: Theory vs. Practice." *Process Biochemistry* 14 (5): 31–33.
- Cooney, Charles L. 1979. "Continuous Culture of Microorganisms: An Overview and Perspective." *Annals of the New York Academy of Sciences* 326 (1 Biochemical E): 295–314. <https://doi.org/10.1111/j.1749-6632.1979.tb14170.x>.
- Perley, Christopher R., James R. Swartz, and Charles L. Cooney. 1979. "Measurement of Cell Mass Concentration with a Continuous-Flow Viscometer." *Biotechnology and Bioengineering* 21 (3): 519–23. <https://doi.org/10.1002/bit.260210314>.
- Wang, Henry Y., Charles L. Cooney, and Daniel I. C. Wang. 1979. "Computer Control of Bakers' Yeast Production." *Biotechnology and Bioengineering* 21 (6): 975–95. <https://doi.org/10.1002/bit.260210605>.
- Wang, H. Y., and C. L. Cooney. 1979. "On-Line Gas Analysis for Material Balances and Control." *Biotechnology and Bioengineering Symposium* 9: 13–23.
- Cooney, C. L., Chokyun Rha, and S. R. Tannenbaum. 1980. "Single-Cell Protein: Engineering, Economics, and Utilization in Foods." *Advances in Food Research* 26 (C): 1–52. [https://doi.org/10.1016/S0065-2628\(08\)60317-1](https://doi.org/10.1016/S0065-2628(08)60317-1).
- Weaver, J. C., C. R. Perley, and C. L. Cooney. 1980. "Mass Spectrometer Monitoring of a Yeast Fermentation." In *Enzyme Engineering*, 85–88. Springer US. [https://doi.org/10.1007/978-1-4684-3749-2\\_11](https://doi.org/10.1007/978-1-4684-3749-2_11).
- Pungor, Erno, Christopher R. Perley, Charles L. Cooney, and James C. Weaver. 1980. "Continuous Monitoring of Fermentation Outlet Gas Using a Computer Coupled MS." *Biotechnology Letters* 2 (9): 409–14. <https://doi.org/10.1007/BF00144246>.
- Fulton, Scott P., Charles L. Cooney, and James C. Weaver. 1980. "Thermal Enzyme Probe with Differential Temperature Measurements in a Laminar Flow-through Cell." *Analytical Chemistry* 52 (3): 505–8. <https://doi.org/10.1021/ac50053a029>.
- Weaver, James C., Christopher R. Perley, Fred M. Reames, and Charles L. Cooney. 1980. "Temporarily Immobilized Microorganisms: Rapid Measurements Using a Mass Spectrometer." *Biotechnology Letters* 2 (3): 133–37. <https://doi.org/10.1007/BF00142039>.
- Dalal, R. K., M. Akedo, C. L. Cooney, and A. J. Sinskey. 1980. "Microbial Route for Acrylic Acid Production." *Biosources Digest* 2 (2): 89–97.
- Winter, Josef U., and Charles L. Cooney. 1980. "Fermentation of Cellulose and Fatty Acids with Enrichments from Sewage Sludge." *European Journal of Applied Microbiology and Biotechnology* 11 (1): 60–66. <https://doi.org/10.1007/BF00514080>.
- Sinskey, A. J., M. Akedo, and C. L. Cooney. 1981. "Acrylate Fermentations." *Basic Life Sciences* 18: 473–92. [https://doi.org/10.1007/978-1-4684-3980-9\\_28](https://doi.org/10.1007/978-1-4684-3980-9_28).

- Gold, Daniel, Ali Mohagheghi, Charles L. Cooney, and Daniel I. C. Wang. 1981. "Single-Cell Protein Production from Spent Sulfite Liquor Utilizing Cell-Recycle and Computer Monitoring." *Biotechnology and Bioengineering* 23 (9): 2105–16. <https://doi.org/10.1002/bit.260230914>.
- Goldberg, I., and C. L. Cooney. 1981. "Formation of Short-Chain Fatty Acids from H<sub>2</sub> and CO<sub>2</sub> by a Mixed Culture of Bacteria." *Applied and Environmental Microbiology* 41 (1): 148–54. <https://doi.org/10.1128/aem.41.1.148-154.1981>.
- Cooney, C. L., H. M. Koplove, and M. Häggström. 1981. "Transient Phenomena in Continuous Culture." In *Continuous Cultures of Cells*, edited by Pete H. Calcott, 1:143–68. CRC Press.
- Pungor, E., E. Schaefer, J. C. Weaver, and C. L. Cooney. 1981. "Direct Monitoring of a Fermentation in a Computer-Mass Spectrometer-Fermentor System." In *Scientific and Engineering Principles*, 393–98. Elsevier. <https://doi.org/10.1016/b978-0-08-025383-1.50070-9>.
- Swartz, J. R., and C. L. Cooney. 1981. "Methanol Inhibition in Continuous Culture of *Hansenula Polymorpha*." *Applied and Environmental Microbiology* 41 (5): 1206–13. <https://doi.org/10.1128/aem.41.5.1206-1213.1981>.
- Wong, Chi Huey, Jennifer Gordon, Charles L. Cooney, and George M. Whitesides. 1981. "Regeneration of NAD(P)H Using Glucose 6-Sulfate and Glucose-6-Phosphate Dehydrogenase." *Journal of Organic Chemistry* 46 (23): 4676–79. <https://doi.org/10.1021/jo00336a009>.
- Galliher, P. M., C. L. Cooney, R. Langer, and R. J. Linhardt. 1981. "Heparinase Production by *Flavobacterium Heparinum*." *Applied and Environmental Microbiology* 41 (2): 360–65. <https://doi.org/10.1128/aem.41.2.360-365.1981>.
- Glanser, Margareta, Siniša N. Ban, and Charles L. Cooney. 1981. "Biodegradation of Sodium Sulfite Liquor (NaSSL) and Sodium Lignosulfonate (NaLS) by a Mixed Culture of Microorganisms." *European Journal of Applied Microbiology and Biotechnology* 13 (1): 54–59. <https://doi.org/10.1007/BF00505342>.
- Langer, Robert, Robert J. Linhardt, Steven Hoffberg, Annette K. Larsen, Charles L. Cooney, David Tapper, and Michael Klein. 1982. "An Enzymatic System for Removing Heparin in Extracorporeal Therapy." *Science* 217 (4556): 261–63. <https://doi.org/10.1126/science.7089564>.
- Schaefer, E. J., and C. L. Cooney. 1982. "Production of Maltase by Wild Type and a Constitutive Mutant of *Saccharomyces Italicus*." *Applied and Environmental Microbiology* 43 (1): 75–80. <https://doi.org/10.1128/aem.43.1.75-80.1982>.
- Longin, R., C. L. Cooney, and A. L. Demain. 1982. "Studies on the Overproduction of Indole-Containing Metabolites by a Methanol-Utilizing Yeast - *Hansenula Polymorpha*." *Applied Biochemistry and Biotechnology* 7 (4): 281–93. <https://doi.org/10.1007/BF02798306>.
- Linhardt, Robert J., Gerald L. Fitzgerald, Charles L. Cooney, and Robert Langer. 1982. "Mode of Action of Heparin Lyase on Heparin." *Biochimica et Biophysica Acta (BBA)/Protein Structure and Molecular* 702 (2): 197–203. [https://doi.org/10.1016/0167-4838\(82\)90503-9](https://doi.org/10.1016/0167-4838(82)90503-9).
- Langer, R., R. J. Linhardt, A. K. Larsen, C. L. Cooney, D. Tapper, and M. Klein. 1982. "In Vivo Activity of Microbial Heparinase." *American Society for Artificial Internal Organs Journal* 28 (1): 387–90. [https://journals.lww.com/asaiojournal/Citation/1982/28000/IN\\_VIVO\\_ACTIVITY\\_OF\\_MICROBIAL\\_HEPARINASE.80.aspx](https://journals.lww.com/asaiojournal/Citation/1982/28000/IN_VIVO_ACTIVITY_OF_MICROBIAL_HEPARINASE.80.aspx).
- Pungor, E., C. L. Cooney, and J. C. Weaver. 1982. "Computer Controlled Mass Spectrometer Monitoring of Fermentations." In *Enzyme Engineering: Proceedings of the International Enzyme*

- Engineering Conference*, 6:429–30. Plenum Press. [https://doi.org/10.1007/978-1-4615-9290-7\\_103](https://doi.org/10.1007/978-1-4615-9290-7_103).
- Gallihier, P. M., R. J. Linhardt, L. J. Conway, R. Langer, and C. L. Cooney. 1982. “Regulation of Heparinase Synthesis in *Flavobacterium Heparinum*.” *European Journal of Applied Microbiology and Biotechnology* 15 (4): 252–57. <https://doi.org/10.1007/BF00499966>.
- Langer, R., R. J. Linhardt, C. L. Cooney, D. Tapper, and M. D. Klein. 1982. “Immobilized Heparinase: Production, Purification, and Application in Extracorporeal Therapy.” In *Enzyme Engineering: Proceedings of the International Enzyme Engineering Conference*, 6:433–41. Plenum Press. [https://doi.org/10.1007/978-1-4615-9290-7\\_104](https://doi.org/10.1007/978-1-4615-9290-7_104).
- Linhardt, R. J., A. Grant, C. L. Cooney, and R. Langer. 1982. “Differential Anticoagulant Activity of Heparin Fragments Prepared Using Microbial Heparinase.” *Journal of Biological Chemistry* 257 (July): 7310–13. <https://www.jbc.org/content/257/13/7310.short>.
- Langer, R., R. J. Linhardt, P. M. Gallihier, M. M. M. Flanagan, C. L. Cooney, and M. D. Klein. 1982. “A System for Heparin Removal.” In *Biomaterials: Interfacial Phenomena and Applications*, edited by S. Cooper, A. Hoffman, N. Peppas, and B. Rattner, 493–509. American Chemical Society (ACS). <https://doi.org/10.1021/ba-1982-0199.ch031>.
- Kangas, T. T., C. L. Cooney, and R. F. Gomez. 1982. “Expression of a Proline-Enriched Protein in *Escherichia Coli*.” *Applied and Environmental Microbiology* 43 (3): 629–35. <https://doi.org/10.1128/aem.43.3.629-635.1982>.
- Pungor, E., A. M. Klibanov, C. L. Cooney, and J. C. Weaver. 1982. “Continuous 2HHO Determination in H<sub>2</sub>O Solution by a Computer-Controlled Mass Spectrometer.” *Biological Mass Spectrometry* 9 (5): 181–85. <https://doi.org/10.1002/bms.1200090502>.
- Mou, Duen-Gang, and Charles L. Cooney. 1983. “Growth Monitoring and Control in Complex Medium: A Case Study Employing Fed-Batch Penicillin Fermentation and Computer-Aided on-Line Mass Balancing.” *Biotechnology and Bioengineering* 25 (1): 257–69. <https://doi.org/10.1002/bit.260250119>.
- Mou, Duen-Gang, and Charles L. Cooney. 1983. “Growth Monitoring and Control through Computer-Aided on-Line Mass Balancing in a Fed-Batch Penicillin Fermentation.” *Biotechnology and Bioengineering* 25 (1): 225–55. <https://doi.org/10.1002/bit.260250118>.
- Pungor, E., E. J. Schaefer, C. L. Cooney, and James C. Weaver. 1983. “Direct Monitoring of the Liquid and Gas Phases during a Fermentation in a Computer-Mass-Spectrometer-Fermentor System.” *European Journal of Applied Microbiology and Biotechnology* 18 (3): 135–40. <https://doi.org/10.1007/BF00498034>.
- Cooney, Charles L. 1983. “Prospects for Chemicals and Fuels Production by Fermentation.” In *Basic Life Sciences*, 25:307–16. Plenum Press. [https://doi.org/10.1007/978-1-4684-4460-5\\_19](https://doi.org/10.1007/978-1-4684-4460-5_19).
- Klein, Michael D., Robert A. Drongowski, Robert J. Linhardt, Charles L. Cooney, and Robert S. Langer. 1983. “Heparinase: *In Vivo* Activity and Immunogenicity in Rabbits.” *The Journal of Laboratory and Clinical Medicine* 102 (5): 828–37. <https://doi.org/10.5555/uri:pii:0022214383900331>.
- Cooney, Charles L. 1983. “Strategies for Optimizing Microbial Growth and Product Formation.” In *Foundations of Biochemical Engineering*, 179–98. <https://doi.org/10.1021/bk-1983-0207.ch008>.
- Cooney, C. L., and J. R. Swartz. 1983. “Application of Computer Control to Yeast Fermentation.” In *Modelling and Control of Biotechnical Processes*, 243–51. Elsevier. <https://doi.org/10.1016/B978-0-08-029978-5.50033-1>.



- Akedo, Masakatsu, Charles L. Cooney, and Anthony J. Sinskey. 1983. "Direct Demonstration of Lactate-Acrylate Interconversion in *Clostridium Propionicum*." *Bio/Technology* 1 (9): 791–94. <https://doi.org/10.1038/nbt1183-791>.
- Moo-Young, Murray, John D. Bu'Lock, Charles Cooney, and Bernard Glick. 1983. "Inaugural Editorial." *Biotechnology Advances* 1 (1): 1–2. [https://doi.org/10.1016/0734-9750\(83\)90296-3](https://doi.org/10.1016/0734-9750(83)90296-3).
- Cooney, Charles L. 1983. "Bioreactors: Design and Operation." *Science* 219 (4585): 728–33. <https://doi.org/10.1126/science.219.4585.728>.
- Irving, Charles S., Charles L. Cooney, Laura T. Brown, Daniel Gold, Jennifer Gordon, and Peter D. Klein. 1983. "Microbial Fermentative Preparation of L-[<sup>15</sup>N<sub>2</sub>]Lysine and Its Tracer: Application to Serum Amino Acid Kinetic Studies." *Analytical Biochemistry* 131 (1): 93–98. [https://doi.org/10.1016/0003-2697\(83\)90139-2](https://doi.org/10.1016/0003-2697(83)90139-2).
- Linhardt, R. J., C. L. Cooney, D. Tapper, C. A. Zannetos, A. K. Larsen, and R. Langer. 1984. "An Immobilized Microbial Heparinase for Blood Deheparinization." *Applied Biochemistry and Biotechnology* 9 (1): 41–55. <https://doi.org/10.1007/BF02798373>.
- Renard, Jean Marc, Ariane Mansouri, and Charles L. Cooney. 1984. "Computer Controlled Fed-Batch Fermentation of the *Methylophilum Pseudomonas* AM1." *Biotechnology Letters* 6 (9): 577–80. <https://doi.org/10.1007/BF00135685>.
- Fulton, Scott P., Charles L. Cooney, and James C. Weaver. 1984. "High-Resolution Differential Thermometry in Flowing Aqueous Solutions." *Review of Scientific Instruments* 55 (4): 597–601. <https://doi.org/10.1063/1.1137803>.
- Hägström, Margareta H., and Charles L. Cooney. 1984. "α-Glucosidase Synthesis in Batch and Continuous Culture of *Saccharomyces Cerevisiae*." *Applied Biochemistry and Biotechnology* 9 (5–6): 475–81. <https://doi.org/10.1007/BF02798401>.
- Moo-Young, M., B. R. Glick, John D. Bu'Lock, and C. L. Cooney. 1984. "Editorial." *Biotechnology Advances* 2 (2). [https://doi.org/10.1016/0734-9750\(84\)90001-6](https://doi.org/10.1016/0734-9750(84)90001-6).
- Cabral, J. M. S., B. Casale, and C. L. Cooney. 1985. "Effect of Antifoam Agents and Efficiency of Cleaning Procedures on the Cross-Flow Filtration of Microbial Suspensions." *Biotechnology Letters* 7 (10): 749–52. <https://doi.org/10.1007/BF01032290>.
- Bulot, E., and C. L. Cooney. 1985. "Selective Production of Phenylalanine from Phenylpyruvate Using Growing Cells of *Corynebacterium glutamicum*." *Biotechnology Letters* 7 (2): 93–97. <https://doi.org/10.1007/BF01026675>.
- Charles L. Cooney. 1985. "Introduction." In *Comprehensive Biotechnology: The Principles, Applications, and Regulations of Biotechnology in Industry, Agriculture, and Medicine*, edited by Charles L. Cooney, A. E. Humphrey, and Murray. Moo-Young, 1st ed. Oxford: Pergamon Press.
- Cooney, Charles L. 1985. "Media Sterilization." In *Comprehensive Biotechnology: The Principles, Applications, and Regulations of Biotechnology in Industry, Agriculture, and Medicine*, edited by Charles L. Cooney, A. E. Humphrey, and Murray. Moo-Young. Pergamon Press.
- Yang, V. C., R. J. Linhardt, H. Bernstein, C. L. Cooney, and R. Langer. 1985. "Purification and Characterization of Heparinase From *Flavobacterium Heparinum*." *The Journal of Biological Chemistry* 260 (3): 1849–57.

- Cerbelaud, E. C., L. J. Conway, P. M. Galliher, R. S. Langer, and C. L. Cooney. 1986. "Sulfur Regulation of Heparinase and Sulfatases in *Flavobacterium Heparinum*." *Applied and Environmental Microbiology* 51 (3): 640–46.
- Cameron, Douglas C., and Charles L. Cooney. 1986. "A Novel Fermentation: The Production of R(-)-1, 2-Propanediol and Acetol by *Clostridium Thermosaccharolyticum*." *Bio/Technology* 4 (7): 651–54. <https://doi.org/10.1038/nbt0786-651>.
- Yang, Victor C., Howard Bernstein, Charles L. Cooney, Jill C. Kadam, and Robert Langer. 1986. "Removal of the Anticoagulant Activities of the Low Molecular Weight Heparin Fractions and Fragments with Flavobacterial Heparinase." *Thrombosis Research* 44 (5): 599–610. [https://doi.org/10.1016/0049-3848\(86\)90162-3](https://doi.org/10.1016/0049-3848(86)90162-3).
- Klier, J., J. M. S. Cabral, and C. L. Cooney. 1986. "Oxygen Limitation on L-Serine Production in a Hollow-Fiber Bioreactor." *Applied Biochemistry and Biotechnology* 13 (3): 181–87. <https://doi.org/10.1007/BF02798456>.
- Cooney, C. L. 1986. "Continuous Culture: A Tool for Research, Development and Production." In *Perspectives in Biotechnology and Applied Microbiology*, 271–85. Springer Netherlands. [https://doi.org/10.1007/978-94-009-4321-6\\_21](https://doi.org/10.1007/978-94-009-4321-6_21).
- Cooney, Charles L., and Daniel I. C. Wang. 1986. "Introduction." In *Chemical Engineering Communications*, edited by Charles L. Cooney and Daniel I. C. Wang, 45:v–vi. Taylor & Francis Group. <https://doi.org/10.1080/00986448608911365>.
- Hamel, J. F. P., R. C. Wilson, J. C. Erickson, and C. L. Cooney. 1986. "*Les Fluides Supercritiques Dans Les Procédés Biochimiques*." *Biofutur* 51: 83–98.
- Schmidt, Robert L., and Charles L. Cooney. 1986. "Production of Acetic Acid from Hydrogen and Carbon Dioxide by *Clostridium* Species ATCC 29797." *Chemical Engineering Communications* 45 (1–6): 61–73. <https://doi.org/10.1080/00986448608911372>.
- Sánchez-Riera, F., Douglas C. Cameron, and C. L. Cooney. 1987. "Influence of Environmental Factors in the Production of R(-)-1, 2-Propanediol by *Clostridium Thermosaccharolyticum*." *Biotechnology Letters* 9 (7): 449–54. <https://doi.org/10.1007/BF01027450>.
- Cabral, J. M. S., and C. L. Cooney. 1987. "L-Serine Production from Glycine and Methanol Using Free and Entrapped Cells of *Pseudomonas* AM 1." *Annals of the New York Academy of Sciences* 501 (1 Enzyme Engine): 354–57. <https://doi.org/10.1111/j.1749-6632.1987.tb45736.x>.
- Simon, Ethan S., George M. Whitesides, Douglas C. Cameron, David J. Weitz, and Charles L. Cooney. 1987. "A Combined Microbial/Chemical Synthesis of (+)-(R)-Methyloxirane Having High Enantiomeric Excess." *Journal of Organic Chemistry* 52 (18): 4042–44. <https://doi.org/10.1021/jo00227a018>.
- Pungor, Erno, Noubar B. Afeyan, Neal F. Gordon, and Charles L. Cooney. 1987. "Continuous Affinity-Recycle Extraction: A Novel Protein Separation Technique." *Bio/Technology* 5 (6): 604–8. <https://doi.org/10.1038/nbt0687-604>.
- Romette, Jean Louis, and Charles L. Cooney. 1987. "L-Glutamine Enzyme Electrode for on-Line Mammalian Cell Culture Process Control." *Analytical Letters* 20 (7): 1069–81. <https://doi.org/10.1080/00032718708064592>.
- Yang, Victor C., Howard Bernstein, Charles L. Cooney, and Robert Langer. 1987. "Large Scale Preparation and Characterization of Mucopolysaccharase Contamination Free Heparinase." *Applied Biochemistry and Biotechnology* 16 (1): 35–50. <https://doi.org/10.1007/BF02798354>.

- Linhardt, R. J., P. M. Galliher, and C. L. Cooney. 1987. "Polysaccharide Lyases." *Applied Biochemistry and Biotechnology* 12 (2): 135–76. <https://doi.org/10.1007/BF02798420>.
- Bamberger, Thomas, John C. Erickson, Charles L. Cooney, and Sanat K. Kumar. 1988. "Measurement and Model Prediction of Solubilities of Pure Fatty Acids, Pure Triglycerides, and Mixtures of Triglycerides in Supercritical Carbon Dioxide." *Journal of Chemical and Engineering Data* 33 (3): 327–33. <https://doi.org/10.1021/jc00053a029>.
- Bernstein, Howard, Victor C. Yang, Charles L. Cooney, and Robert Langer. 1988. "Immobilized Heparin Lyase System for Blood Deheparinization." *Methods in Enzymology* 137 (C): 515–29. [https://doi.org/10.1016/0076-6879\(88\)37048-5](https://doi.org/10.1016/0076-6879(88)37048-5).
- Cooney, C. L., D. Petrides, M. Barrera, and L. Evans. 1988. "Computer-Aided Design of a Biochemical Process." In *The Impact of Chemistry on Biotechnology*, 39–61. <https://doi.org/10.1021/bk-1988-0362.ch005>.
- Afeyan, Noubar B., Neal F. Gordon, and Charles L. Cooney. 1989. "Mathematical Modelling of the Continuous Affinity-Recycle Extraction Purification Technique." *Journal of Chromatography A* 478 (C): 1–19. [https://doi.org/10.1016/0021-9673\(89\)90002-2](https://doi.org/10.1016/0021-9673(89)90002-2).
- Dabora, R. L., D. T. Eberiel, and C. L. Cooney. 1989. "Release of  $\beta$ -Galactosidase from *E. Coli* by a Plasmid Containing a Temperature Sensitive Lytic Function." *Biotechnology Letters* 11 (12): 845–50. <https://doi.org/10.1007/BF01026838>.
- Aires-Barros, M. R., J. M. S. Cabral, R. C. Willson, J. F. P. Hamel, and C. L. Cooney. 1989. "Esterification-Coupled Extraction of Organic Acids: Partition Enhancement and Underlying Reaction and Distribution Equilibria." *Biotechnology and Bioengineering* 34 (7): 909–15. <https://doi.org/10.1002/bit.260340705>.
- Petrides, D. P., C. L. Cooney, and L. B. Evans. 1989. "An Introduction to Biochemical Process Design." In *Chemical Engineering Problems in Biotechnology*, edited by Michael L. Shuler, 1:351–91. American Institute of Chemical Engineers.
- Petrides, Demetri, Charles L. Cooney, Lawrence B. Evans, Randall P. Field, and Mark Snoswell. 1989. "Bioprocess Simulation: An Integrated Approach to Process Development." *Computers and Chemical Engineering* 13 (4–5): 553–61. [https://doi.org/10.1016/0098-1354\(89\)85038-0](https://doi.org/10.1016/0098-1354(89)85038-0).
- Mistry, Firoz R., and Charles L. Cooney. 1989. "Production of Ethanol by *Clostridium Thermosaccharolyticum*: I. Effect of Cell Recycle and Environmental Parameters." *Biotechnology and Bioengineering* 34 (10): 1295–1304. <https://doi.org/10.1002/bit.260341008>.
- Vunjak-Novakovic, G. V., L. E. Freed, H. Bernstein, S. Ayyackirai, R. Langer, and C. L. Cooney. 1989. "A Fluid-Dynamic Study of the Enzymatic-Fluidized Bed Reactor for Blood Deheparinization." In *Fluidization VI: Proceedings of the International Conference on Fluidization*, edited by J.R. Grace, L.W. Shemilt, and M. Bergougnou, 483–90. Engineering Foundation.
- Mistry, Firoz R., and Charles L. Cooney. 1989. "Production of Ethanol by *Clostridium Thermosaccharolyticum*: II. A Quantitative Model Describing Product Distributions." *Biotechnology and Bioengineering* 34 (10): 1305–20. <https://doi.org/10.1002/bit.260341009>.
- Cooney, Charles L. 1990. "Separations for Biotechnology." In *Trends in Biotechnology*, 8:340–44. Elsevier Current Trends. [https://doi.org/10.1016/0167-7799\(90\)90219-n](https://doi.org/10.1016/0167-7799(90)90219-n).
- Gokaraju, R., and C. L. Cooney. 1990. "Biochemical Engineering Problems, in Bioprocess Computations." In *Bioprocess Computations in Biotechnology*, edited by T. K. Ghose. Vol. 2. Lincoln: E. Horwood.

- Willson, Richard, Eric Bulot, and Charles L. Cooney. 1990. "Clathrate Hydrate Formation Enhances Near-Critical and Supercritical Solvent Extraction Equilibria." *Chemical Engineering Communications* 95 (1): 47–55. <https://doi.org/10.1080/00986449008911466>.
- Dabora, R. L., and C. L. Cooney. 1990. "Intracellular Lytic Enzyme Systems and Their Use for Disruption of *Escherichia Coli*." *Advances in Biochemical Engineering/Biotechnology* 43: 11–30. <https://doi.org/10.1007/bfb0009077>.
- Zimmermann, J. J., R. Langer, and C. L. Cooney. 1990. "Specific Plate Assay for Bacterial Heparinase." *Applied and Environmental Microbiology* 56 (11): 3593–94. <https://doi.org/10.1128/aem.56.11.3593-3594.1990>.
- Erickson, John C., Philippe Schyngs, and Charles L. Cooney. 1990. "Effect of Pressure on an Enzymatic Reaction in a Supercritical Fluid." *AIChE Journal* 36 (2): 299–301. <https://doi.org/10.1002/aic.690360218>.
- Cooney, Charles L., Ulrich Holeschovsky, and Gopal Agarwal. 1990. "Vortex Flow Filtration for Ultrafiltration of Protein Solutions." In *Separations for Biotechnology* 2, 122–31. Springer Netherlands. [https://doi.org/10.1007/978-94-009-0783-6\\_14](https://doi.org/10.1007/978-94-009-0783-6_14).
- Gordon, N. F., H. Tsujimura, and C. L. Cooney. 1990. "Optimization and Simulation of Continuous Affinity-Recycle Extraction (CARE)." *Bioseparation* 1 (1): 9–21. <https://pubmed.ncbi.nlm.nih.gov/1368163/>.
- Piret, James M., and Charles L. Cooney. 1990. "Mammalian Cell and Protein Distributions in Ultrafiltration Hollow Fiber Bioreactors." *Biotechnology and Bioengineering* 36 (9): 902–10. <https://doi.org/10.1002/bit.260360905>.
- Piret, James M., and Charles L. Cooney. 1990. "Immobilized Mammalian Cell Cultivation in Hollow Fiber Bioreactors." *Biotechnology Advances* 8 (4): 763-IN2. [https://doi.org/10.1016/0734-9750\(90\)91996-T](https://doi.org/10.1016/0734-9750(90)91996-T).
- Gordon, Neal F., Christine M. V. Moore, and Charles L. Cooney. 1990. "An Overview of Continuous Protein Purification Processes." *Biotechnology Advances* 8 (4): 741–62. [https://doi.org/10.1016/0734-9750\(90\)91995-S](https://doi.org/10.1016/0734-9750(90)91995-S).
- Gordon, Neal F., and Charles L. Cooney. 1990. "Impact of Continuous Affinity—Recycle Extraction (CARE) in Downstream Processing." In *Protein Purification - ACS Symposium Series Vol. 427*, edited by Michael R. Ladisch, Richard C. Willson, Chih-duen C. Painton, and Stuart E. Builder, 118–38. American Chemical Society (ACS). <https://doi.org/10.1021/bk-1990-0427.ch009>.
- Zimmermann, Joseph J. F., Karen Oddie, Robert Langer, and Charles L. Cooney. 1991. "The Release of Heparinase from the Periplasmic Space of *Flavobacterium Heparinum* by Three-Step Osmotic Shock." *Applied Biochemistry and Biotechnology* 30 (2): 137–48. <https://doi.org/10.1007/BF02921681>.
- Piret, James M., and Charles L. Cooney. 1991. "Model of Oxygen Transport Limitations in Hollow Fiber Bioreactors." *Biotechnology and Bioengineering* 37 (1): 80–92. <https://doi.org/10.1002/bit.260370112>.
- Piret, J. M., and C. L. Cooney. 1991. "Hybridoma, Antibody and Growth Factor Distributions in the Shell-Side of Ultrafiltration Hollow Fiber Bioreactors." In *Production of Biologicals from Animal Cells in Culture*, 457–59. Elsevier. <https://doi.org/10.1016/b978-0-7506-1103-9.50086-x>.

- Holeschovsky, Ulrich B., and Charles L. Cooney. 1991. "Quantitative Description of Ultrafiltration in a Rotating Filtration Device." *AICHE Journal* 37 (8): 1219–26. <https://doi.org/10.1002/aic.690370811>.
- Lindell, Per I., Lee Hall, Tai Guang Wu, and Charles L. Cooney. 1991. "Comparison of an Electrochemiluminescent Homogenous Immunoassay and an ELISA for Monitoring Productivity in Mammalian Cell Bioreactors." *Biotechnology Techniques* 5 (3): 187–92. <https://doi.org/10.1007/BF00152779>.
- Piret, J. M., D. A. Devens, and C. L. Cooney. 1991. "Nutrient and Metabolite Gradients in Mammalian Cell Hollow Fiber Bioreactors." *The Canadian Journal of Chemical Engineering* 69 (2): 421–28. <https://doi.org/10.1002/cjce.5450690204>.
- Santos, J. A. L., J. M. S. Cabral, and C. L. Cooney. 1992. "Recovery of Alkaline Proteases by Membrane Filtration - Effect of Membrane Type and Addition of Submicron Sized Charged Particles." *Bioprocess Engineering* 7 (5): 205–11. <https://doi.org/10.1007/BF00369547>.
- Prior, J. J., and C. L. Cooney. 1992. "Bioreactor Fault Detection Using Data Reconciliation." In *Computer and Information Science Applications in Bioprocess Engineering*, edited by Antonio R. Moreira and Kimberlee K. Wallace. Dordrecht: Kluwer Academic Publishing.
- Raju, Gokaraju K., and Charles L. Cooney. 1992. "Fermentation Monitoring." *Current Opinion in Biotechnology* 3 (1): 40–44. [https://doi.org/10.1016/0958-1669\(92\)90123-Z](https://doi.org/10.1016/0958-1669(92)90123-Z).
- O'Connor, Gregory M., Fernando Sanchez-Riera, and Charles L. Cooney. 1992. "Design and Evaluation of Control Strategies for High Cell Density Fermentations." *Biotechnology and Bioengineering* 39 (3): 293–304. <https://doi.org/10.1002/bit.260390307>.
- Iosileviskii, G., H. Brenner, Christine M. V. Moore, and C. L. Cooney. 1993. "Mass Transport and Chemical Reaction in Taylor-Vortex Flows with Entrained Catalytic Particles: Applications to a Novel Class of Immobilized Enzyme Biochemical Reactors." *Philosophical Transactions of the Royal Society of London. Series A: Physical and Engineering Sciences* 345 (1675): 259–94. <https://doi.org/10.1098/rsta.1993.0130>.
- Freed, L. E., G. V. Vunjak-Novakovic, H. Bernstein, C. L. Cooney, and R. Langer. 1993. "Kinetics of Immobilized Heparinase in Human Blood." *Annals of Biomedical Engineering* 21 (1): 67–76. <https://doi.org/10.1007/BF02368166>.
- Balakrishnan, M., G. P. Agarwal, and C. L. Cooney. 1993. "Study of Protein Transmission through Ultrafiltration Membranes." *Journal of Membrane Science* 85 (2): 111–28. [https://doi.org/10.1016/0376-7388\(93\)85161-O](https://doi.org/10.1016/0376-7388(93)85161-O).
- Sasisekharan, Ram, Mark Bulmer, Kelley W. Moremen, Charles L. Cooney, and Robert Langer. 1993. "Cloning and Expression of Heparinase I Gene from *Flavobacterium heparinum*." *Proceedings of the National Academy of Sciences of the United States of America* 90 (8): 3660–64. <https://doi.org/10.1073/pnas.90.8.3660>.
- Kashihara, Tadashi, Masao Mawatari, Takashi Inoue, John J. Prior, and Charles L. Cooney. 1993. "A PH Profile Control of Beer Fermentation Using a Knowledge-Based System." *Journal of Fermentation and Bioengineering* 76 (2): 157–59. [https://doi.org/10.1016/0922-338X\(93\)90076-K](https://doi.org/10.1016/0922-338X(93)90076-K).
- Venkataraman, Ganesh, V. Sasisekharan, Charles L. Cooney, Robert Langer, and Ram Sasisekharan. 1994. "A Stereochemical Approach to Pyranose Ring Flexibility: Its Implications for the

- Conformation of Dermatan Sulfate.” *Proceedings of the National Academy of Sciences of the United States of America* 91 (13): 6171–75. <https://doi.org/10.1073/pnas.91.13.6171>.
- Sasisekharan, Ram, Marsha A. Moses, Matthew A. Nugent, Charles L. Cooney, and Robert Langer. 1994. “Heparinase Inhibits Neovascularization.” *Proceedings of the National Academy of Sciences of the United States of America* 91 (4): 1524–28. <https://doi.org/10.1073/pnas.91.4.1524>.
- Summers, Nevin M., and Charles L. Cooney. 1994. “Gene Therapy: Biotech’s n + 1 Technology: What They Are Teaching at MIT’s Sloan School of Management.” *Bio/Technology* 12 (1): 42–45. <https://doi.org/10.1038/nbt0194-42>.
- Cooney, C. L. 1994. “Bioprocess Engineering: Opportunities for Improving Quality and Decreasing Costs of Health Care.” In *Medical and Biological Engineering in the Future of Health Care*, edited by Joseph D. Andrade. Salt Lake City: University of Utah Press.
- Ernst, Steffen, Robert Langer, Charles L. Cooney, and Ram Sasisekharan. 1995. “Enzymatic Degradation of Glycosaminoglycans.” *Critical Reviews in Biochemistry and Molecular Biology* 30 (5): 387–444. <https://doi.org/10.3109/10409239509083490>.
- Sasisekharan, Ram, Deborah Leckband, Ranga Godavarti, Ganesh Venkataraman, Charles L. Cooney, and Robert Langer. 1995. “Heparinase I from *Flavobacterium Heparinum*: The Role of the Cysteine Residue in Catalysis as Probed by Chemical Modification and Site-Directed Mutagenesis.” *Biochemistry* 34 (44): 14441–48. <https://doi.org/10.1021/bi00044a022>.
- Cooney, Charles L. 1995. “Are We Prepared for Animal Cell Technology in the 21st Century?” *Cytotechnology* 18 (1–2): 3–8. <https://doi.org/10.1007/BF00744313>.
- Prior, John J., Patricia D. Christie, Robert J. Murray, William H. Orme-Johnson, and Charles L. Cooney. 1995. “Continuous Monitoring of Nitrogenase Activity in *Azotobacter Vinelandii* Fermentation Using Off-Gas Mass Spectrometry.” *Biotechnology and Bioengineering* 47 (3): 373–83. <https://doi.org/10.1002/bit.260470311>.
- Venkataraman, Ganesh, V. Sasisekharan, Charles L. Cooney, Robert Langer, and Ram Sasisekharan. 1995. “Complex Flexibility of the Transforming Growth Factor  $\beta$  Superfamily.” *Proceedings of the National Academy of Sciences of the United States of America* 92 (12): 5406–10. <https://doi.org/10.1073/pnas.92.12.5406>.
- Moore, Christine M. V., and Charles L. Cooney. 1995. “Axial Dispersion in Taylor-Couette Flow.” *AIChE Journal* 41 (3): 723–27. <https://doi.org/10.1002/aic.690410329>.
- Venkataraman, Ganesh, V. Sasisekharan, Andrew B. Herr, David M. Ornitz, Gabriel Waksman, Charles L. Cooney, Robert Langer, and Ram Sasisekharan. 1996. “Preferential Self-Association of Basic Fibroblast Growth Factor Is Stabilized by Heparin during Receptor Dimerization and Activation.” *Proceedings of the National Academy of Sciences of the United States of America* 93 (2): 845–50. <https://doi.org/10.1073/pnas.93.2.845>.
- Ernst, Steffen, Ganesh Venkataraman, Stefan Winkler, Ranga Godavarti, Robert Langer, Charles L. Cooney, and Ram Sasisekharan. 1996. “Expression in *Escherichia Coli*, Purification and Characterization of Heparinase I from *Flavobacterium Heparinum*.” *Biochemical Journal* 315 (2): 589–97. <https://doi.org/10.1042/bj3150589>.
- Sasisekharan, Ram, Ganesh Venkataraman, Ranga Godavarti, Steffen Ernst, Charles L. Cooney, and Robert Langer. 1996. “Heparinase I from *Flavobacterium Heparinum*: Mapping and Characterization of the Heparin Binding Domain.” *Journal of Biological Chemistry* 271 (6): 3124–31. <https://doi.org/10.1074/jbc.271.6.3124>.

- Godavarti, Ranga, Matthew Davis, Ganesh Venkataraman, Charles Cooney, Robert Langer, and Ram Sasisekharan. 1996. "Heparinase III from *Flavobacterium Heparinum*: Cloning and Recombinant Expression in *Escherichia Coli*." *Biochemical and Biophysical Research Communications* 225 (3): 751–58. <https://doi.org/10.1006/bbrc.1996.1246>.
- Godavarti, Ranga, Charles L. Cooney, Robert Langer, and Ram Sasisekharan. 1996. "Heparinase I from *Flavobacterium Heparinum*. Identification of a Critical Histidine Residue Essential for Catalysis as Probed by Chemical Modification and Site-Directed Mutagenesis." *Biochemistry* 35 (21): 6846–52. <https://doi.org/10.1021/bi960356g>.
- Ernst, Steffen, Oscar A. Garro, Stefan Winkler, Ganesh Venkataraman, Robert Langer, Charles L. Cooney, and Ram Sasisekharan. 1997. "Process Simulation for Recombinant Protein Production: Cost Estimation and Sensitivity Analysis for Heparinase I Expressed in *Escherichia Coli*." *Biotechnology and Bioengineering* 53 (6): 575–82. [https://doi.org/10.1002/\(SICI\)1097-0290\(19970320\)53:6<575::AID-BIT5>3.0.CO;2-J](https://doi.org/10.1002/(SICI)1097-0290(19970320)53:6<575::AID-BIT5>3.0.CO;2-J).
- Weaver, J. C., C. L. Cooney, S. R. Tannenbaum, and S. P. Fulton. 1997. "Possible Biomedical Applications of the Thermal Enzyme Probe." In *Biomedical Applications of Immobilized Enzymes and Proteins*, edited by Thomas Ming Swi Chang, 2:191–205. Springer. <https://www.springer.com/gp/book/9781468426151>.
- Konz, J. O., J. King, and C. L. Cooney. 1998. "Effects of Oxygen on Recombinant Protein Expression." *Biotechnology Progress* 14 (3): 393–409. <https://doi.org/10.1021/bp9800211>.
- Ernst, S., G. Venkataraman, V. Sasisekharan, R. Langer, C. L. Cooney, and R. Sasisekharan. 1998. "Pyranose Ring Flexibility. Mapping of Physical Data for Iduronate in Continuous Conformational Space." *Journal of the American Chemical Society* 120 (9): 2099–2107. <https://doi.org/10.1021/ja972185o>.
- Prazeres, Duarte Miguel F., Thomas Schluep, and Charles Cooney. 1998. "Preparative Purification of Supercoiled Plasmid DNA Using Anion-Exchange Chromatography." *Journal of Chromatography A* 806 (1): 31–45. [https://doi.org/10.1016/S0021-9673\(97\)01254-5](https://doi.org/10.1016/S0021-9673(97)01254-5).
- Schluep, Thomas, and Charles L. Cooney. 1998. "Immobilization of Oligonucleotides on a Large Pore Support for Plasmid Purification by Triplex Affinity Interaction." *Bioseparation* 7 (6): 317–26. <https://doi.org/10.1023/A:1008109618927>
- Giordano, R. C., R. L.C. Giordano, D. M.F. Prazeres, and C. L. Cooney. 1998. "Analysis of a Taylor-Poiseuille Vortex Flow Reactor — I: Flow Patterns and Mass Transfer Characteristics." *Chemical Engineering Science* 53 (20): 3635–52. [https://doi.org/10.1016/S0009-2509\(98\)00179-1](https://doi.org/10.1016/S0009-2509(98)00179-1).
- Ameer, Guillermo A., Gilda Barabino, Ram Sasisekharan, William Harmon, Charles L. Cooney, and Robert Langer. 1999. "Ex Vivo Evaluation of a Taylor-Couette Flow, Immobilized Heparinase I Device for Clinical Application." *Proceedings of the National Academy of Sciences of the United States of America* 96 (5): 2350–55. <https://doi.org/10.1073/pnas.96.5.2350>.
- Prazeres, Duarte M. F., Guilherme N. M. Ferreira, Gabriel A. Monteiro, Charles L. Cooney, and Joaquim M. S. Cabral. 1999. "Large-Scale Production of Pharmaceutical-Grade Plasmid DNA for Gene Therapy: Problems and Bottlenecks." *Trends in Biotechnology* 17 (4): 169–74. [https://doi.org/10.1016/S0167-7799\(98\)01291-8](https://doi.org/10.1016/S0167-7799(98)01291-8).
- Ameer, G. A., E. A. Grovender, B. Obradovic, C. L. Cooney, and R. Langer. 1999. "RTD Analysis of a Novel Taylor-Couette Flow Device for Blood Detoxification." *AIChE Journal* 45 (3): 633–38. <https://doi.org/10.1002/aic.690450320>.

- Ameer, G. A., S. Raghavan, R. Sasisekharan, W. Harmon, C. L. Cooney, and R. Langer. 1999. "Regional Heparinization via Simultaneous Separation and Reaction in a Novel Taylor-Couette Flow Device." *Biotechnology and Bioengineering* 63 (5): 618–24. [https://doi.org/10.1002/\(SICI\)1097-0290\(19990605\)63:5<618::AID-BIT12>3.0.CO;2-3](https://doi.org/10.1002/(SICI)1097-0290(19990605)63:5<618::AID-BIT12>3.0.CO;2-3).
- Dowd, Christopher J., Charles L. Cooney, and Matthew A. Nugent. 1999. "Heparan Sulfate Mediates BFGF Transport through Basement Membrane by Diffusion with Rapid Reversible Binding." *Journal of Biological Chemistry* 274 (8): 5236–44. <https://doi.org/10.1074/jbc.274.8.5236>.
- Giordano, Raquel L. C., Roberto C. Giordano, and Charles L. Cooney. 2000. "Performance of a Continuous Taylor-Couette-Poiseuille Vortex Flow Enzymic Reactor with Suspended Particles." *Process Biochemistry* 35 (10): 1093–1101. [https://doi.org/10.1016/S0032-9592\(00\)00143-6](https://doi.org/10.1016/S0032-9592(00)00143-6).
- Cooney, C. L., D. I. Wang, and R. I. Mateles. 2000. "Measurement of Heat Evolution and Correlation with Oxygen Consumption During Microbial Growth. Reprinted from *Biotechnology and Bioengineering*, Vol. XI, Issue 3, Pages 269-281 (1968)." *Biotechnology and Bioengineering* 67 (6). [https://doi.org/10.1002/\(SICI\)1097-0290\(20000320\)67:6<691::AID-BIT7>3.0.CO;2-R](https://doi.org/10.1002/(SICI)1097-0290(20000320)67:6<691::AID-BIT7>3.0.CO;2-R).
- Giordano, R.L.C, R.C Giordano, D.M.F Prazeres, and C.L Cooney. 2000. "Analysis of a Taylor–Poiseuille Vortex Flow Reactor — II: Reactor Modeling and Performance Assessment Using Glucose-Fructose Isomerization as Test Reaction." *Chemical Engineering Science* 55 (18): 3611–26. [https://doi.org/10.1016/S0009-2509\(00\)00052-X](https://doi.org/10.1016/S0009-2509(00)00052-X).
- Giordano, R. L. C., R. C. Giordano, and C. L. Cooney. 2000. "A Study on Intra-Particle Diffusion Effects in Enzymatic Reactions: Glucose-Fructose Isomerization." *Bioprocess Engineering* 23 (2): 159–66. <https://doi.org/10.1007/s004499900142>.
- Grovender, Eric, Hidde Ploegh, Charlie Cooney, Robert Langer, Maria Rupnik, and Guillermo A. Ameer. 2000. "Therapeutic Blood Detoxification via an Immunoabsorptive Fluidized Bed." *Annals of Biomedical Engineering*.
- Grovender, Eric A., Charles L. Cooney, Robert S. Langer, and Guillermo A. Ameer. 2001. "Modeling of the Mixing Behavior of the Novel Fluidized Extracorporeal Immunoabsorber." *Chemical Engineering Science* 56 (18): 5437–41. [https://doi.org/10.1016/S0009-2509\(01\)00202-0](https://doi.org/10.1016/S0009-2509(01)00202-0).
- Lai, Chee-Kong, David Holt, James C. Leung, Charles L. Cooney, Gokaraju K. Raju, and Peter Hansen. 2001. "Real Time and Noninvasive Monitoring of Dry Powder Blend Homogeneity." *AIChE Journal* 47 (11): 2618–22. <https://doi.org/10.1002/aic.690471124>.
- Schilling, B. M., L. M. Alvarez, D. I. C. Wang, and C. L. Cooney. 2002. "Continuous Desulfurization of Dibenzothiophene with *Rhodococcus Rhodochrous* IGTS8 (ATCC 53968)." *Biotechnology Progress* 18 (6): 1207–13. <https://doi.org/10.1021/bp0200144>.
- Griffiths, Steven W., and Charles L. Cooney. 2002. "Development of a Peptide Mapping Procedure to Identify and Quantify Methionine Oxidation in Recombinant Human A1-Antitrypsin." *Journal of Chromatography A* 942 (1–2): 133–43. [https://doi.org/10.1016/S0021-9673\(01\)01350-4](https://doi.org/10.1016/S0021-9673(01)01350-4).
- Grovender, Eric A., Charles L. Cooney, Robert Langer, and Guillermo A. Ameer. 2002. "Immunoabsorption Model for a Novel Fluidized-Bed Blood Detoxification Device." *AIChE Journal* 48 (10): 2357–65. <https://doi.org/10.1002/aic.690481025>.
- Laska, Michael E., and Charles L. Cooney. 2002. "Bioreactors, Continuous Stirred-Tank Reactors." In *Encyclopedia of Bioprocess Technology*. Hoboken, NJ, USA: John Wiley & Sons, Inc. <https://doi.org/10.1002/0471250589.ebt030>.



- Griffiths, Steven W., Jonathan King, and Charles L. Cooney. 2002. "The Reactivity and Oxidation Pathway of Cysteine 232 in Recombinant Human A1-Antitrypsin." *Journal of Biological Chemistry* 277 (28): 25486–92. <https://doi.org/10.1074/jbc.M203089200>.
- Lai, Chee-Kong, Aina Zahari, Bayen Miller, Wendy E. Katstra, Michael J. Cima, and Charles L. Cooney. 2004. "Nondestructive and On-Line Monitoring of Tablets Using Light-Induced Fluorescence Technology." *AAPS PharmSciTech* 5 (1): 1–10. <https://doi.org/10.1208/pt050103>.
- Biwier, Arno, Steve Griffith, and Charles Cooney. 2005. "Uncertainty Analysis of Penicillin V Production Using Monte Carlo Simulation." *Biotechnology and Bioengineering* 90 (2): 167–79. <https://doi.org/10.1002/bit.20359>.
- Afeyan, Noubar B., and Charles L. Cooney. 2006. "Professor Daniel I. C. Wang: A Legacy of Education, Innovation, Publication, and Leadership." *Biotechnology and Bioengineering* 95 (2): 206–17. <https://doi.org/10.1002/bit.21078>.
- Pernenkil, Lakshman, and Charles L. Cooney. 2006. "A Review on the Continuous Blending of Powders." *Chemical Engineering Science* 61 (2): 720–42. <https://doi.org/10.1016/j.ces.2005.06.016>.
- Ibáñez-González, María J., and Charles L. Cooney. 2007. "Studies on Protein Adsorption in a Vortex Flow Reactor." *Process Biochemistry* 42 (12): 1592–1601. <https://doi.org/10.1016/j.procbio.2007.08.012>.
- Raju, Gokaraju K., and Charles L. Cooney. 2008. "Media and Air Sterilization." In *Biotechnology: Second, Completely Revised Edition*, 3:157–84. Wiley. <https://doi.org/10.1002/9783527620845.ch9>.
- Posten, Clemens H., and Charles L. Cooney. 2008. "Growth of Microorganisms." In *Biotechnology*, 1:111–62. Weinheim, Germany: Wiley-VCH Verlag GmbH. <https://doi.org/10.1002/9783527620821.ch3>.
- Weber, Daniel, Yu Pu, and Charles L. Cooney. 2008. "Quantification of Lubricant Activity of Magnesium Stearate by Atomic Force Microscopy." *Drug Development and Industrial Pharmacy* 34 (10): 1097–99. <https://doi.org/10.1080/03639040801965061>.
- Ma, Junfen, and Charles L. Cooney. 2008. "Application of Vortex Flow Adsorption Technology to Intein-Mediated Recovery of Recombinant Human A1-Antitrypsin." *Biotechnology Progress* 20 (1): 269–76. <https://doi.org/10.1021/bp0341803>.
- Pu, Yu, Malay Mazumder, and Charles Cooney. 2009. "Effects of Electrostatic Charging on Pharmaceutical Powder Blending Homogeneity." *Journal of Pharmaceutical Sciences* 98 (7): 2412–21. <https://doi.org/10.1002/jps.21595>.
- Domike, Reuben, Samuel Ngai, and Charles L. Cooney. 2010. "Light Induced Fluorescence for Predicting API Content in Tablets: Sampling and Error." *International Journal of Pharmaceutics* 391 (1–2): 13–20. <https://doi.org/10.1016/j.ijpharm.2010.02.009>.
- Couto, Daniela S., Luis Perez-Breva, Pedro Saraiva, and Charles L. Cooney. 2012. "Lessons from Innovation in Drug-Device Combination Products." *Advanced Drug Delivery Reviews* 64 (1): 69–77. <https://doi.org/10.1016/j.addr.2011.10.008>.
- Couto, Daniela S., Luis Perez-Breva, and Charles L. Cooney. 2012. "Regenerative Medicine: Learning from Past Examples." *Tissue Engineering. Part A* 18 (21–22): 2386–93. <https://doi.org/10.1089/ten.TEA.2011.0639>.

- Mascia, Salvatore, Patrick L. Heider, Haitao Zhang, Richard Lakerveld, Brahim Benyahia, Paul I. Barton, Richard D. Braatz, et al. 2013. “End-to-End Continuous Manufacturing of Pharmaceuticals: Integrated Synthesis, Purification, and Final Dosage Formation.” *Angewandte Chemie International Edition* 52 (47): 12359–63. <https://doi.org/10.1002/anie.201305429>.
- Weil, Henry Birdseye, Vikalp Pal Sabhlok, and Charles L. Cooney. 2014. “The Dynamics of Innovation Ecosystems: A Case Study of the US Biofuel Market.” *Energy Strategy Reviews* 3 (C): 88–99. <https://doi.org/10.1016/j.esr.2014.07.005>.
- Konstantinov, Konstantin B., and Charles L. Cooney. 2015. “White Paper on Continuous Bioprocessing May 20–21 2014 Continuous Manufacturing Symposium.” *Journal of Pharmaceutical Sciences* 104 (3): 813–20. <https://doi.org/10.1002/jps.24268>.
- Allison, Gretchen, Yanxi Tan Cain, Charles Cooney, Tom Garcia, Tara Goen Bizjak, Oyvind Holte, Nirdosh Jagota, et al. 2015. “Regulatory and Quality Considerations for Continuous Manufacturing May 20–21, 2014 Continuous Manufacturing Symposium.” *Journal of Pharmaceutical Sciences* 104 (3): 803–12. <https://doi.org/10.1002/jps.24324>.
- Croughan, Matthew S., Konstantin B. Konstantinov, and Charles Cooney. 2015. “The Future of Industrial Bioprocessing: Batch or Continuous?” *Biotechnology and Bioengineering* 112 (4): 648–51. <https://doi.org/10.1002/bit.25529>.
- Stewart, S. R., P. W. Barone, A. Bellisario, C. L. Cooney, P. A. Sharp, A. J. Sinskey, S. Natesan, and S. L. Springs. 2016. “Leveraging Industry-Academia Collaborations in Adaptive Biomedical Innovation.” *Clinical Pharmacology & Therapeutics* 100 (6): 647–53. <https://doi.org/10.1002/cpt.504>.
- Ibáñez-González, María J., Tania Mazzuca-Sobczuk, Rosa M. Redondo-Miranda, Emilio Molina-Grima, and Charles L. Cooney. 2016. “A Novel Vortex Flow Reactor for the Purification of B-Phycoerythrin from *Porphyridium Cruentum*.” *Chemical Engineering Research and Design* 111 (July): 24–33. <https://doi.org/10.1016/j.cherd.2016.03.032>.
- Nasr, Moheb M., Markus Krumme, Yoshihiro Matsuda, Bernhardt L. Trout, Clive Badman, Salvatore Mascia, Charles L. Cooney, et al. 2017. “Regulatory Perspectives on Continuous Pharmaceutical Manufacturing: Moving from Theory to Practice: September 26-27, 2016, International Symposium on the Continuous Manufacturing of Pharmaceuticals.” In *Journal of Pharmaceutical Sciences*, 106:3199–3206. Elsevier B.V. <https://doi.org/10.1016/j.xphs.2017.06.015>.
- Cohen, Ron, Steven Holtzman, Jeremy M. Levin, John M. Maraganore, Michael Aberman, Chris Adams, Julian Adams, et al. 2018. “Biotech Leaders Call for Free Press.” *Nature Biotechnology* 36 (10): 920–22. <https://doi.org/10.1038/nbt.4271>.
- Badman, Clive, Charles L. Cooney, Alastair Florence, Konstantin Konstantinov, Markus Krumme, Salvatore Mascia, Moheb Nasr, and Bernhardt L. Trout. 2019. “Why We Need Continuous Pharmaceutical Manufacturing and How to Make It Happen.” *Journal of Pharmaceutical Sciences* 108 (11): 3521–23. <https://doi.org/10.1016/j.xphs.2019.07.016>.
- Cooney, Charles L., H. Michael Koplove, and Margareta Häggström. 2020. “Transient Phenomena in Continuous Culture.” In *Continuous Cultures of Cells*, 143–68. CRC Press. <https://doi.org/10.1201/9781351070874-7>.