ALEXANDRIA
Revista de Educação em Ciência e Tecnologia

MATERIAL SUPLEMENTAR

Referências dos estudos localizados (n = 401 materiais)

1) SL5

Parga-Lozano, D. L., & Carvalho, W. L. P. (2019). A pesquisa sobre ambientalização curricular. *Tecné, Episteme y Didaxis: TED*, (46), 39-56.

2) SL8

Cunha, S., Costa, O. B. S., Santana, L. L. B., & Lopes, W. A. (2015). Acetanilida: Síntese verde sem solvente. *Química Nova*, *38*(6), 874-876. https://doi.org/10.5935/0100-4042.20150080

3) SL9

Martinez, S. T., Silva, B. V., Pinto, A. C., Ferreira, V. F., & Silva, F. C (2012). Adição de anilinas à naftoquinona em água e em fase sólida. *Química Nova*, *35*(4), 858-860. https://doi.org/10.1590/S0100-40422012000400037

4) SL11

Cunha, S., & Matos, J. S. (2017). Além da caipirinha: Cachaça como solvente para síntese orgânica e extração de pigmento. *Química Nova*, *40*(10), 1253-1258. https://doi.org/10.21577/0100-4042.20170110

5) SL16

Luz, L. T. S., Gomes, S. I. A. A., Sandri, M. C. M., Mello, F., & Bolzan, J. A. (2019). Avaliação e otimização das condições de obtenção do ácido acetilsalicílico para fins didáticos. *Educación Química*, *30*(2), 54-69. https://doi.org/10.22201/fq.18708404e.2019.2.67393

6) SL19

Cunha, S., Lustosa, D. M., Conceição, N. D., Fascio, M., & Magalhães, V. (2012). Biomassa em aula prática de Química Orgânica Verde: Cravo-da-índia como fonte simultânea de óleo essencial e de furfural. *Química Nova*, *35*(3), 638-641. https://doi.org/10.1590/S0100-40422012000300035

7) SL27

Cunha, S., & Santana, L. L. B. (2012). Condensação de Knoevenagel de aldeídos aromáticos com o ácido de Meldrum em água: Uma aula experimental de Química Orgânica Verde. *Química Nova*, *35*(3), 642-647. https://doi.org/10.1590/S0100-40422012000300036

8) SL28

Parga Lozano, D. L. (2015). Conhecimento Didático do Conteúdo sobre a Química Verde: O caso dos professores universitários de Química. *Tecné, Episteme y Didaxis: TED*, (38), 167-182. http://dx.doi.org/10.17227/01213814.38ted167.182

9) SL29

Coelho, J. C., & Marques, C. A. (2007). Contribuições freireanas para a contextualização no ensino de Química. *Ensaio Pesquisa em Educação em Ciências*, *9*(1), 59-75. https://doi.org/10.1590/1983-21172007090105

10) SL30

Pitanga, A. F. (2016). Crise da modernidade, Educação Ambiental, Educação para o Desenvolvimento Sustentável e Educação em Química Verde:(Re)pensando paradigmas. *Ensaio Pesquisa em Educação em Ciências*, *18*(3), 141-159. https://doi.org/10.1590/1983-21172016180307

11) SL35

Mello, F., Gomes, S. I. A. A., Giusti, E. D., Sandri, M. C. M., &Robaert, S. (2019). Determinação do grau de saponificação de óleo residual: Uma experiência no ensino de Química sob as perspectivas CTSA e Química Verde. *Educación Química*, *30*(1), 21-30. https://doi.org/10.22201/fq.18708404e.2019.1.64110

12) SL40

Machado, A. A. S. C. (2012). Dos primeiros aos segundos doze princípios da Química Verde. *Química Nova*, *35*(6), 1250-1259. https://doi.org/10.1590/S0100-40422012000600034

13) SL43

Vargas-Rodríguez, Y. M., Valdivia, A. O., Vargas, S. L., Escamilla, A. H., Ruvalcaba, R. M., & Rodríguez, G. I. V. (2016). El diagrama de flujo como semáforo de seguridad ecológica de los experimentos de laboratorio. *Educación Química*, *27*(1), 30-36. https://doi.org/10.1016/j.eq.2015.04.013

14) SL45

González, M. B. R. (2018). Encadenamiento mediado por aprendizajebasadoenproyectos ecoeficientes. *Sophia*, *14*(2), 60-72. https://doi.org/10.18634/sophiaj.14v.2i.788

15) SL59

León-Cedeño, F. (2009). Implementation de algunas de las técnicas de la Química Verde (o Química Sustentable) endocencia. *Educación Química*, *20*(4), 441-446. https://doi.org/10.1016/S0187-893X(18)30048-X

16) SL61

Merat, L. M. O. C., & Gil, R. A. S. S. (2003). Inserção do conceito de economia atômica no programa de uma disciplina de Química Orgânica Experimental. *Química Nova*, *26*(5), 779-781. https://doi.org/10.1590/S0100-40422003000500025

17) SL64

Miranda, R., Noguez, O., Velasco, B., Arroyo, G., Penieres, G., Martínez, J. O., & Delgado, F. (2009). Irradiacióninfrarroja: Una alternativa para laactivación de reacciones y sucontribución a laQuímica Verde. *Educación Química*, *20*(4), 421-425.

18) SL68

Ayuso, A. H. (2009). Los estudios de posgradoenQuímica SosteniblEenEspaña. *Educación Química*, *20*(4), 405-411. https://doi.org/10.1016/S0187-893X(18)30043-0

19) SL78

Bruno, C. M. A., & Almeida, M. R. (2021). Óleos essenciais e vegetais: Matérias-primas para fabricação de bioprodutos nas aulas de Química Orgânica Experimental. *Química Nova*, *44*(7), 899-907. https://doi.org/10.21577/0100-4042.20170722

20) SL82

Sandri, M. C. M., & Santin Filho, O. (2019). Os modelos de abordagem da Química Verde no ensino de Química. *Educación Química*, *30*(4), 34-46. https://doi.org/10.22201/fq.18708404e.2019.4.68335

21) SL83

Santos, A. P. B., Gonçalves, I. R. C., Pais, K. C., Martinez, S. T., Lachter, E. R., & Pinto, A. C. (2009). Oxidação do borneol à cânfora com água sanitária-um experimento simples, de baixo custo e limpo. *Química Nova*, *32*(6), 1667-1669. https://doi.org/10.1590/S0100-40422009000600053

22) SL84

Succaw, G. L., &Doxsee, K. M. (2009). Palladium-catalyzed synthesis of a benzofuran: A case study in the development of a Green Chemistry laboratory experiment. *Educación Química*, *20*(4), 433-440. https://doi.org/10.1016/S0187-893X(18)30047-8

23) SL93

Maximiano, F. A., Corio, P., Porto, P. A., & Fernandez, C. (2009). Química Ambiental e Química Verde no conjunto do conhecimento químico: Concepções de alunos de graduação em Química da Universidade de São Paulo. *Educación Química*, *20*(4), 398-404. https://doi.org/10.1016/S0187-893X(18)30042-9

24) SL96

Wallau, M., Bianchini, D., Ebersol, C. P., Santos Júnior, A. D., & Barboza, T. M. (2015). Química verdadeiramente verde - propriedades químicas do cloro e sua ilustração por experimentos em escala miniaturizada. *Química Nova*, *38*(3), 436-445. https://doi.org/10.5935/0100-4042.20140314

25) SL98

Fandiño, J. S. M., & Marín, L. A. E. (2021). Química Verde aplicada enlosresiduos de universidades. *Educación Química*, *32*(2), 154-167. https://doi.org/10.22201/fq.18708404e.2021.2.76534

26) SL102

Serrano, M. C. D. (2009). Química Verde: Un nuevo enfoque para el cuidado delmedio ambiente. *Educación Química*, *20*(4), 412-420. https://doi.org/10.1016/S0187-893X(18)30044-2

27) SL106

Omori, A. T., Portas, V. B., & Oliveira, C. S. (2012). Redução enzimática do 4-(dimetilamino) benzaldeído com pedaços de cenoura (Daucuscarota): Um experimento simples na compreensão da biocatálise. *Química Nova*, *35*(2), 435-437. https://doi.org/10.1590/S0100-40422012000200036

28) SL107

Mendoza, M. S., Sánchez, A. V., Manrique, C. G., & Ávila-Zárraga, J. G. (2013). Reducción de nitrocompuestos utilizando el sistema Pd/H2N-NH2/Mw. *Educación Química*, *24*(3), 347-350. https://doi.org/10.1016/S0187-893X(13)72485-6

29) SL108

Santos, R. V., Viana, G. M., Moreira, A. F. S., Nóbrega, V. S., Silva, V. A. S., Malta, L. F. B., Aguiar, L. C. S., & Senra, J. D. (2019). Revisiting the nucleophilicity concept in a comprehensive biomass valorization experiment: From papaya seeds to thiourea motifs. *Química Nova*, *42*(8), 940-946. https://doi.org/10.21577/0100-4042.20170395

30) SL113

Cunha, S., Santos Filho, R. F., Riatto, V. B., & Dourado, G. A. A. (2013). Síntese e hidrólise de azalactonas de Erlenmeyer-Plöchl mediadas por radiação micro-ondas em aparelhos doméstico e dedicado: experimentos de Química Orgânica para a graduação. *Química Nova*, *36*(1), 190-194. https://doi.org/10.1590/S0100-40422013000100032

31) SL114

Messina, L. C., &Omori, A. T. (2021). Síntese verde de 1, 3-diariltriazenos simétricos e assimétricos em vinagre. *Química Nova*, *44*(3), 372-376. https://doi.org/10.21577/0100-4042.20170655

32) SL116

Ávila-Zárraga, J. G. (2009). Síntesis fotoquímica mediante luz solar. *Educación Química*, *20*(4), 426-432. https://doi.org/10.1016/S0187-893X(18)30046-6

33) SL119

Vega Botto, A., & Torres, L. D. S. (2018). Sustitución de una práctica de Laboratoriocon enfoque a" Química Verde" como herramienta para lareducción de residuospeligrosos. *Educación Química*, *29*(1), 110-120. https://doi.org/10.22201/fq.18708404e.2018.1.63809

34) SL127

Mansilla, D. S., Muscia, G. C., &Ugliarolo, E. A. (2014). Una fundamentación para laincorporación de laQuímica Verde enlos currículos de Química Orgánica. *Educación Química*, *25*(1), 56-59. https://doi.org/10.1016/S0187-893X(14)70524-5

35) SL131

Aragão, N. M., Veloso, M. C. C., & Andrade, J. B. (2009). Validação de métodos cromatográficos de análise: um experimento de fácil aplicação utilizando cromatografia líquida de alta eficiência (CLAE) e os princípios da" Química Verde" na determinação de metilxantinas em bebidas. *Química Nova*, *32*(9), 2476-2481. https://doi.org/10.1590/S0100-40422009000900043

36) E2

Hopson, R., Lee, P. Y. D., & Hess, K. M. (2018). 1-Dimensional selective nuclear overhauser effect NMR spectroscopy to characterize products from a two-step Green Chemistry synthesis. *Journal of Chemical Education*, *95*(4), 641-647. https://doi.org/10.1021/acs.jchemed.7b00494

37) E3

Phonchaiya, S., Panijpan, B., Rajviroongit, S., Wright, T., & Blanchfield, J. T. (2009). A facile solvent-free cannizzaro reaction. *Journal of Chemical Education*, *86*(1), 85-86. https://doi.org/10.1021/ed086p85

38) E4

Bennett, G. D. (2006). A green enantioselective aldol condensation for the undergraduate organic laboratory. *Journal of Chemical Education*, *83*(12), 1871-1872. https://doi.org/10.1021/ed083p1871

39) E5

Hooper, M. M., & Boef, B. (2009). A green multicomponent reaction for the Organic Chemistry laboratory: The aqueous Passerini reaction. *Journal of Chemical Education*, *86*(9), 1077-1079. https://doi.org/10.1021/ed086p1077

40) E7

Bennett, G. D. (2005). A green polymerization of aspartic acid for the undergraduate organic laboratory. *Journal of Chemical Education*, *82*(9), 1380-1381. https://doi.org/10.1021/ed082p1380

41) E8

Jones-Wilson, T. M., & Burtch, E. A. (2005). A green starting material for electrophilic aromatic substitution for the undergraduate organic laboratory. *Journal of Chemical Education*, *82*(4), 616-617. https://doi.org/10.1021/ed082p616

42) E11

Lazarski, K. E., Rich, A. A., & Mascarenhas, C. M. (2008). A one-pot, asymmetric Robinson annulation in the Organic Chemistry majors laboratory. *Journal of Chemical Education*, *85*(11), 1531-1534. https://doi.org/10.1021/ed085p1531

43) E12

Bopegedera, A. M. R. P. (2018). A second look at the kinetics of the Iron–Oxygen reaction: Determination of the total order using a greener approach. *Journal of Chemical Education*, *95*(10), 1897-1899. https://doi.org/10.1021/acs.jchemed.8b00012

44) E15

Barcena, H., & Chen, P. (2016). An anesthetic drug demonstration and an introductory antioxidant activity experiment with "Eugene, the sleepy fish". *Journal of Chemical Education*, *93*(1), 202-205. https://doi.org/10.1021/ed5008469

45) E19

Owens, J. E., Zimmerman, L. B., Gardner, M. A., & Lowe, L. E. (2016). Analysis of whiskey by dispersive liquid–liquid microextraction coupled with gas chromatography/mass spectrometry: An upper division analytical chemistry experiment guided by green chemistry. *Journal of Chemical Education*, *93*(1), 186-192. https://doi.org/10.1021/acs.jchemed.5b00342

46) E20

O'Neil, N. J., Scott, S., Relph, R., & Ponnusamy, E. (2021). Approaches to incorporating Green Chemistry and safety into laboratory culture. *Journal of Chemical Education*, *98*(1), 84-91. https://doi.org/10.1021/acs.jchemed.0c00134

47) E22

Ribeiro, M. G. T. C., Yunes, S. F., & Machado, A. A. S. C. (2014). Assessing the greenness of chemical reactions in the laboratory using updated holistic graphic metrics based on the globally harmonized system of classification and labeling of chemicals. *Journal of Chemical Education*, *91*(11), 1901-1908. https://doi.org/10.1021/ed400421b

48) E25

Santos, E. S., Garcia, I. C. G., & Gomez, E. F. L. (2004). Caring for the environment while teaching Organic Chemistry. *Journal of Chemical Education*, *81*(2), 232-238. https://doi.org/10.1021/ed081p232

49) E26

Cerrillo, J. L., Lopez-Hernandez, I., & Palomares, A. E. (2021). Catalytic removal of bromates from water: A hands-on laboratory experiment to solve a water pollution problem through catalysis. *Journal of Chemical Education*, *98*(5), 1726-1731. https://doi.org/10.1021/acs.jchemed.0c01297

50) E28

Cunningham, A. D., Ham, E. Y., &Vosburg, D. A. (2011). Chemoselectivereactions of citral: Green syntheses of natural perfumes for the undergraduate organic laboratory. *Journal of Chemical Education*, *88*(3), 322-324. https://doi.org/10.1021/ed100539m

51) E33

Fennie, M. W., & Roth, J. M. (2016). Comparing amide-forming reactions using green chemistry metrics in an undergraduate organic laboratory. *Journal of Chemical Education*, *93*(10), 1788-1793. https://doi.org/10.1021/acs.jchemed.6b00090

52) E34

Cacciatore, K. L., Amado, J., Evans, J. J., &Sevian, H. (2008). Connecting solubility, equilibrium, and periodicity in a green, inquiry experiment for the general chemistry laboratory. *Journal of Chemical Education*, *85*(2), 251-253. https://doi.org/10.1021/ed085p251

53) E41

Armenta, S., & Guardia, M. (2011). Determination of mercury in milk by cold vapor atomic fluorescence: AGreen Analytical Chemistry laboratory experiment.

Journal of Chemical Education, *88*(4), 488-491. https://doi.org/10.1021/ed100578g

54) E43

Akers, S. M., Conkle, J. L., Thomas, S. N., & Rider, K. B. (2006). Determination of the heat of combustion of biodiesel using bomb calorimetry. A multidisciplinary undergraduate chemistry experiment. *Journal of Chemical Education*, *83*(2), 260-262. https://doi.org/10.1021/ed083p260

55) E48

Aubrecht, K. B., Padwa, L., Shen, X., & Bazargan, G. (2015). Development and implementation of a series of laboratory field trips for advanced high school students to connect chemistry to sustainability. *Journal of Chemical Education*, *92*(4), 631-637. https://doi.org/10.1021/ed500630f

56) E54

Sjöström, J. (2013). Eco-driven chemical research in the boundary between academia and industry: PhD students' views on science and society. *Science & Education*, *22*, 2427-2441. https://doi.org/10.1007/s11191-012-9490-4

57) E57

Schultz, M. (2013). Embedding environmental sustainability in the undergraduate chemistry curriculum: A case study. *Journal of Learning Design*, *6*(1), 20-33.

58) E58

Ravía, S., Gamenara, D., Schapiro, V., Bellomo, A., Adum, J., Seoane, G., & Gonzalez, D. (2006). Enantioselective reduction by crude plant parts: Reduction of benzofuran-2-yl methyl ketone with carrot (Daucus carota) bits. *Journal of Chemical Education*, *83*(7), 1049-1051. https://doi.org/10.1021/ed083p1049

59) E60

Mohan, R. S., & Mejia, M. P. (2020). Environmentally friendly organic chemistry laboratory experiments for the undergraduate curriculum: a literature survey and assessment. *Journal of Chemical Education*, *97*(4), 943-959. https://doi.org/10.1021/acs.jchemed.9b00753

60) E65

Cósio, M. N., Cardenal, A. D., Maity, A., Hyun, S. M., Akwaowo, V. E., Hoffman, C. W., Poderes, T. M., & Powers, D. C. (2020). Exploring Green Chemistry with aerobic hypervalent iodine catalysis. *Journal of Chemical Education*, *97*(10), 3816-3821. https://doi.org/10.1021/acs.jchemed.0c00410

61) E68

Hartwell, S. K. (2012). Exploring the potential for using inexpensive natural reagents extracted from plants to teach chemical analysis. *Chemistry Education Research and Practice*, *13*(2), 135-146. https://doi.org/10.1039/C1RP90070F

62) E74

Divya, D., & Raj, K. G. (2019). From scrap to functional materials: Exploring Green and Sustainable Chemistry approach in the undergraduate laboratory. *Journal of Chemical Education*, *96*(3), 535-539. https://doi.org/10.1021/acs.jchemed.8b00484

63) E76

McAllister, G. D., & Parsons, A. F. (2019). Going green in process chemistry: optimizing an asymmetric oxidation reaction to synthesize the antiulcer drug esomeprazole. *Journal of Chemical Education*, *96*(11), 2617-2621. https://doi.org/10.1021/acs.jchemed.9b00350

64) E77

Haack, J. A., Hutchison, J. E., Kirchhoff, M. M., & Levy, I. J. (2005). Going green: Lecture assignments and lab experiences for the college curriculum. *Journal of Chemical Education*, *82*(7), 974-976. https://doi.org/10.1021/ed082p974

65) E78

Leslie, J. M., &Tzeel, B. A. (2016). Gold (III)-catalyzed hydration of phenylacetylene. *Journal of Chemical Education*, *93*(6), 1100-1102. https://doi.org/10.1021/acs.jchemed.5b00628

66) E81

Hjeresen, D. L., Schutt, D. L., & Boese, J. M.(2000). Green Chemistry and education. *Journal of Chemical Education*, *77*(12), 1543-1547. https://doi.org/10.1021/ed077p1543

67) E91

Sutheimer, S., Caster, J. M., & Smith, S. H. (2015). Green soap: an extraction and saponification of avocado oil. *Journal of Chemical Education*, *92*(10), 1763-1765. https://doi.org/10.1021/acs.jchemed.5b00188

68) E95

McKenzie, L. C., Huffman, L. M., Hutchison, J. E., Rogers, C. E., Goodwin, T. E., & Spessard, G. O. (2009). Greener solutions for the Organic Chemistry teaching lab: Exploring the advantages of alternative reaction media. *Journal of Chemical Education*, *86*(4), 488-493. https://doi.org/10.1021/ed086p488

69) E96

Sidhwani, I. T., & Chowdhury, S. (2008). Greener alternative to qualitative analysis for cations without H2S and other sulfur-containing compounds. *Journal of Chemical Education*, *85*(8), 1099-1101. https://doi.org/10.1021/ed085p1099

70) E98

Karpudewan, M., Ismail, Z. H., & Mohamed, N. (2011). Greening a chemistry teaching methods course at the school of educational studies, Universiti Sains Malaysia. *Journal of Education for Sustainable Development*, *5*(2), 197-214. https://doi.org/10.1177/097340821100500210

71) E100

Gron, L. U., Bradley, S. B., McKenzie, J. R., Shinn, S. E., & Teague, M. W. (2013). How to recognize success and failure: Practical assessment of an evolving, first-semester laboratory program using simple, outcome-based tools. *Journal of Chemical Education*, *90*(6), 694-699. https://doi.org/10.1021/ed200523w

72) E103

Cann, M. C., &Dickneider, T. A. (2004). Infusing the chemistry curriculum with green chemistry using real-world examples, web modules, and atom economy in Organic Chemistry courses. *Journal of Chemical Education*, *81*(7), 977-980. https://doi.org/10.1021/ed081p977

73) E105

Zuin, V. G., Segatto, M. L., Zandonai, D. P., Grosseli, G. M., Stahl, A., Zanotti, K., & Andrade, R. S. (2019). Integrating Green and Sustainable Chemistry into undergraduate teaching laboratories: Closing and assessing the loop on the basis of a citrus biorefinery approach for the biocircular economy in Brazil.

Journal of Chemical Education, *96*(12), 2975-2983. https://doi.org/10.1021/acs.jchemed.9b00286

74) E109

Zhu, J., Zhang, M., & Liu, Q. (2008). Interdisciplinary chemistry experiment: An environmentally benign extraction of lycopene. *Journal of Chemical Education*, *85*(2), 256-257. https://doi.org/10.1021/ed085p256

75) E112

Kiryak, Z., Candas, B., & Özmen, H. (2021). Investigating preservice science teachers' cognitive structures on environmental issues. *Journal of Science Learning*, *4*(3), 244-256. https://doi.org/10.17509/jsl.v4i3.30366

76) E113

Stark, A., Ott, D., Kralisch, D., Kreisel, G., &Ondruschka, B. (2010). Ionic liquids and Green Chemistry: A lab experiment. *Journal of Chemical Education*, *87*(2), 196-201. https://doi.org/10.1021/ed8000396

77) E119

Tundo, P., Rosamilia, A. E., &Arico, F. (2010). Methylation of 2-naphthol using dimethyl carbonate under continuous-flow gas-phase conditions. *Journal of Chemical Education*, *87*(11), 1233-1235. https://doi.org/10.1021/ed100448y

78) E120

Das, K. R., & Antony, M. J. (2022). Microscale redox titrations using poly-N-phenyl anthranilic acid fluorescent turn-off indicator for undergraduate Analytical Chemistry lab. *Journal of Chemical Education*, *99*(2), 892-901. https://doi.org/10.1021/acs.jchemed.0c01354

79) E121

Uffelman, E. S., Doherty, J. R., Schultze, C., Burke, A. L., Bonnema, K. R., Watson, T. T., & Lee, D. W. (2004). Microscale syntheses, reactions, and 1H NMR spectroscopic investigations of square planar macrocyclic Tetraamido-N Cu (III) complexes relevant to Green Chemistry. *Journal of Chemical Education*, *81*(2), 182-185. https://doi.org/10.1021/ed081p182

80) E123

Reilly, M. K., King, R. P., Wagner, A. J., & King, S. M. (2014). Microwave-assisted esterification: A discovery-based microscale laboratory experiment. *Journal of Chemical Education*, *91*(10), 1706-1709. https://doi.org/10.1021/ed400721p

81) E124

Dintzner, M. R., Wucka, P. R., & Lyons, T. W. (2006). Microwave-assisted synthesis of a natural insecticide on basic montmorillonite K10 Clay. Green Chemistry in the undergraduate organic laboratory. *Journal of Chemical Education*, *83*(2), 270-272. https://doi.org/10.1021/ed083p270

82) E127

Yousef, A. L., & Smith, A. G. (2022). Multistep synthesis of a 3(2H)-Furanone featuring a greenaldol condensation. *Journal of Chemical Education*, *99*(2), 946-951. https://doi.org/10.1021/acs.jchemed.1c00634

83) E129

Strachan, J., Barnett, C., Maschmeyer, T., Masters, A. F., Motion, A., & Yuen, A. K. L. (2020). Nanoparticles for undergraduates: Creation, characterization, and catalysis. *Journal of Chemical Education*, *97*(2), 4166-4172. https://doi.org/10.1021/acs.jchemed.0c00499

84) E130

Uffelman, E. S. (2004). News from online: Green Chemistry. *Journal of Chemical Education*, *81*(2), 172-176. https://doi.org/10.1021/ed081p172

85) E131

Hie, L., Chang, J. J., & Garg, N. K. (2015). Nickel-catalyzed Suzuki–Miyaura cross-coupling in a green alcohol solvent for an undergraduate Organic Chemistry laboratory. *Journal of Chemical Education*, *92*(3), 571-574. https://doi.org/10.1021/ed500158p

86) E132

Yadav, U., Mande, H., &Ghalsasi, P. (2012). Nitration of phenols using $Cu(NO_3)_2$: Green Chemistry laboratory experiment. *Journal of Chemical Education*, *89*(2), 268-270. https://doi.org/10.1021/ed100957v

87) E136

McKenzie, L. C., Huffman, L. M., Parent, K. E., Hutchison, J. E., & Thompson, J. E. (2004). Patterning self-assembled monolayers on gold: Green materials chemistry in the teaching laboratory. *Journal of Chemical Education*, *81*(4), 545-548. https://doi.org/10.1021/ed081p545

88) E137

Ballard, C. E. (2010). pH-controlled oxidation of an aromatic ketone: Structural elucidation of the products of two Green Chemical reactions. *Journal of Chemical Education*, *87*(2), 190-193. https://doi.org/10.1021/ed800054s

89) E138

Knutson, C. M., Schneiderman, D. K., Yu, M., Javner, C. H., Distefano, M. D., & Wissinger, J. E. (2017). Polymeric medical sutures: An exploration of polymers and Green Chemistry. *Journal of Chemical Education*, *94*(11), 1761-1765. https://doi.org/10.1021/acs.jchemed.6b00835

90) E148

Cannon, A. S., Keirstead, A. E., Hudson, R., Levy, I. J., MacKellar, J., Enright, M., Anderson, K. R., & Howson, E. M. (2021). Safe and Sustainable Chemistry activities: Fostering a culture of safety in K–12 and community outreach programs. *Journal of Chemical Education*, *98*(1), 71-77. https://doi.org/10.1021/acs.jchemed.0c00128

91) E149

Shamuganathan, S., &Karpudewan, M. (2017). Science writing heuristics embedded in Green Chemistry: A tool to nurture environmental literacy among pre-university students. *Chemistry Education Research and Practice*, *18*(2), 386-396. https://doi.org/10.1039/C7RP00013H

92) E156

Gregor, R. W., &Goj, L. A. (2011). Solvent-free synthesis of 2,2′-dinitrobiphenyl: An Ullmann coupling in the introductory organic laboratory. *Journal of Chemical Education*, *88*(3), 331-333. https://doi.org/10.1021/ed900024u

93) E157

Leung, S. H., & Angel, S. A. (2004). Solvent-free Wittig reaction: A green organic chemistry laboratory experiment. *Journal of Chemical Education*, *81*(10), 1492-1493. https://doi.org/10.1021/ed081p1492

94) E159

Song, Y., Wang, Y., & Geng, Z. (2004). Some exercises reflectingGreen Chemistry concepts. *Journal of Chemical Education*, *81*(5), 691-692. https://doi.org/10.1021/ed081p691

95) E166

Verdía, P., Santamarta, F., & Tojo, E. (2017). Synthesis of (3-methoxycarbonyl)coumarin in an ionic liquid: An advanced undergraduate project for Green Chemistry. *Journal of Chemical Education*, *94*(4), 505-509. https://doi.org/10.1021/acs.jchemed.6b00148

96) E171

Sobral, A. J. F. N. (2006). Synthesis of meso-diethyl-2,2′-dipyrromethane in water: An experiment in Green Organic Chemistry. *Journal of Chemical Education*, *83*(11), 1665-1666. https://doi.org/10.1021/ed083p1665

97) E172

Bannin, T. J., Datta, P. P., Kiesewetter, E. T., & Kiesewetter, M. K. (2019). Synthesizing stilbene by olefin metathesis reaction using guided inquiry to compare and contrast Wittig and metathesis methodologies. *Journal of Chemical Education*, *96*(1), 143-147. https://doi.org/10.1021/acs.jchemed.8b00313

98) E173

Xie, Y., Liu, X., & Tao, M. (2016). Synthesizing substituted 2-amino-2-chromenes catalyzed by tertiaryamine-functionalized polyacrylonitrile fiber for students to investigate multicomponent reactions and heterogeneous catalysis. *Journal of Chemical Education*, *93*(12), 2074-2079. https://doi.org/10.1021/acs.jchemed.5b00933

99) E183

Dintzner, M. R., Kinzie, C. R., Pulkrabek, K., & Arena, A. F. (2012). The cyclohexanol cycle and synthesis of nylon 6,6: Green chemistry in the undergraduate organic laboratory. *Journal of Chemical Education*, *89*(2), 262-264. https://doi.org/10.1021/ed2000878

100) E184

Pfab, E., Filíciotto, L., & Luque, R. (2019). The dark side of biomass valorization: A laboratory experiment to understand humin formation, catalysis, and green chemistry. *Journal of Chemical Education*, *96*(12), 3030-3037. https://doi.org/10.1021/acs.jchemed.9b00410

101) E185

Sudarmin, S., Sumarni, W., Zahro, L., Diba, P. F., & Rosita, A. (2018). The development of learning chemistry module integrated with Green Chemistry and ethnoscience to develop students' generic science skills and soft skills. *Journal of Science and Mathematics Education in Southeast Asia*, *41*(1), 254-276.

102) E186

Christensen, J. E., Huddle, M. G., Rogers, J. L., Yung, H., & Mohan, R. S. (2008). The discovery-oriented approach to organic chemistry. 7. Rearrangement of trans-stilbene oxide with bismuth trifluoromethanesulfonate and other metal triflates: A microscale Green Organic Chemistry laboratory experiment. *Journal of Chemical Education*, *85*(9), 1274-1275. https://doi.org/10.1021/ed085p1274

103) E189

McKenzie, L. C., Huffman, L. M., & Hutchison, J. E. (2005). The evolution of a Green Chemistry laboratory experiment: Greener brominations of stilbene. *Journal of Chemical Education, 82*(2), 306-310. https://doi.org/10.1021/ed082p306

104) E190

Winum, J. Y., Bernaud, L., &Filhol, J. S. (2021). The hunt for Maya purple: Revisiting ancient pigments syntheses and properties. *Journal of Chemical Education, 98*(4), 1389-1396. https://doi.org/10.1021/acs.jchemed.0c01306

105) E193

Winter, R. T., Beek, H. L., &Fraaije, M. W. (2012). The nose knows: Biotechnological production of vanillin. *Journal of Chemical Education, 89*(2), 258-261. https://doi.org/10.1021/ed200271u

106) E195

Tsakeni, M. (2017). The promotion of sustainable environmental education by the Zimbabwe Ordinary Level Science Syllabi. *Perspectives in Education, 35*(1), 81-97. https://doi.org/10.18820/2519593X/pie.v35i1.7

107) E197

Sauvage, X., &Delaude, L. (2008). The synthesis of N-benzyl-2-azanorbornene via aqueous hetero Diels-Alder reaction: An undergraduate project in organic synthesis and structural analysis. *Journal of Chemical Education, 85*(11), 1538-1540. https://doi.org/10.1021/ed085p1538

108) E202

Marteel-Parrish, A. E. (2007). Toward the greening of our minds: A new special topics course. *Journal of Chemical Education, 84*(2), 245-247. https://doi.org/10.1021/ed084p245

109) E204

Steele, J. H., Bozor, M. X., & Boyce, G. R. (2020). Transmutation of scent: An evaluation of the synthesis of methyl cinnamate, a commercial fragrance, via a Fischer esterification for the second-year organic laboratory. *Journal of Chemical Education, 97*(11), 4127-4132. https://doi.org/10.1021/acs.jchemed.0c00861

110) E205

Liu, Y., Myers, E. J., Rydahl, S. A., & Wang, X. (2019). Ultrasonic-assisted synthesis, characterization, and application of a metal-organic framework: A Green General Chemistry laboratory project. *Journal of Chemical Education, 96*(10), 2286-2291. https://doi.org/10.1021/acs.jchemed.9b00267

111) E206

Wang, X., Chrzanowski, M., & Liu, Y. (2020). Ultrasonic-assisted transesterification: A green miniscale organic laboratory experiment. *Journal of Chemical Education, 97*(4), 1123-1127. https://doi.org/10.1021/acs.jchemed.9b00956

112) E208

Pham, M., Foster, S. W., Kurre, S., Hunter, R. A., &Grinias, J. P. (2021). Use of portable capillary liquid chromatography for common educational demonstrations involving separations. *Journal of Chemical Education, 98*(7), 2444-2448. https://doi.org/10.1021/acs.jchemed.1c00342

113) WS32

Marteel-Parrish, A., & Harvey, H. (2019). Applying the principles of Green Chemistry in art: Design of a cross-disciplinary course about 'art in the Anthropocene:

Greener art through greener chemistry'. *Green Chemistry Letters and Reviews, 12*(2), 147-160. https://doi.org/10.1080/17518253.2019.1609595

114) WS63

Kovacs, D. G., Rediske, R. R., Marty, S., Spencer, P. J., Wilson, D., & Landenberger, B. (2019). Contemporary concepts in toxicology: A novel multi-instructor general education course to enhance green chemistry and biomedical curricula. *Green Chemistry Letters and Reviews, 12*(2), 136-146. https://doi.org/10.1080/17518253.2019.1609600

115) WS78

Kapassa, M., &Abeliotis, K. (2013). Development of educational material for the secondary schools in Greece focusing on the utilisation of biomass as a raw material. *Fresenius Environmental Bulletin, 22*(12c), 3797-3802.

116) WS104

Linkwitz, M., &Eilks, I. (2022). Experiments with immobilized enzymes as a contribution to learning about Green Chemistry in Chemistry classes. *Chemkon, 29(5)*, 395-401. https://doi.org/10.1002/ckon.202000078

117) WS108

Ahmad Basheer, A., Sindiani, A., Gulacar, O., Eilks, I., &Hugerat, M. (2023). Exploring pre- and in-service science teachers' Green Chemistry and Sustainability awareness and their attitudes towards Environmental Education in Israel. *International Journal of Science and Mathematics Education, 21*(5), 1639-1659. https://doi.org/10.1007/s10763-022-10318-x

118) WS129

Lasker, G. A., Mellor, K. E., & Simcox, N. J. (2019). Green Chemistry & chemical stewardship certificate program: A novel, interdisciplinary approach to Green Chemistry and Environmental health education. *Green Chemistry Letters and Reviews, 12*(2), 178-186. https://doi.org/10.1080/17518253.2019.1609601

119) WS151

Reyes, K. M. D., Bruce, K., &Shetranjiwalla, S. (2023). Green Chemistry, life cycle assessment, and systems thinking: An integrated comparative-complementary chemical decision-making approach. *Journal of Chemical Education, 100*(1), 209-220. https://doi.org/10.1021/acs.jchemed.2c00647

120) WS165

Young, D. M., Welker, J. J. C., & Doxsee, K. M. (2011). Green synthesis of a fluorescent natural product. *Journal of Chemical Education, 88*(3), 319-321. https://doi.org/10.1021/ed1004883

121) WS169

Ware, S. A. (2001). Greening the curriculum. American Chemical Society education programs. *Pure and Applied Chemistry, 73*(8), 1247-1250. https://doi.org/10.1351/pac200173081247

122) WS184

Etzkorn, F. A., & Ferguson, J. L. (2023). Integrating Green Chemistry into Chemistry Education. *Angewandte Chemie International Edition*, *62*(2), e202209768. https://doi.org/10.1002/anie.202209768

123) WS186

Lasker, G. A., & Brush, E. J. (2019). Integrating social and environmental justice into the chemistry classroom: A chemist's toolbox. *Green Chemistry Letters and Reviews*, *12*(2), 168-177. https://doi.org/10.1080/17518253.2019.1609602

124) WS194

Palesch, J. J., Gilles, B. C., Chycota, J., Haj, M. K., Fahnhorst, G. W., & Wissinger, J. E. (2019). Iodination of vanillin and subsequent Suzuki-Miyaura coupling: Two-step synthetic sequence teaching Green Chemistry principles. *Green Chemistry Letters and Reviews*, *12*(2), 117-126. https://doi.org/10.1080/17518253.2019.1609603

125) WS275

Linkwitz, M., Belova, N., &Eilks, I. (2021). Grüne und nachhaltige Chemie bereitsimChemieunterricht der SI? – Das Projekt „Cosmeticsgo green". *Chemkon*, *28*(4), 155-161. https://doi.org/10.1002/ckon.202100003

126) WS276

Ware, S. A. (2001). Teaching chemistry from a societal perspective. *Pure and Applied Chemistry, 73*(7), 1209-1214. https://doi.org/10.1351/pac200173071209

127) WS280

Tavener, S., Hardy, J., Hart, N., & Goddard, A. (2003). Teaching green chemistry: From lemons to lemonade bottles. *Green Chemistry, 5*(3), G46-G48. https://doi.org/10.1039/B305233H

128) WS281

Raston, C. L., & Scott, J. L. (2001). Teaching Green Chemistry. Third-year-level module and beyond. *Pure and Applied Chemistry, 73*(8), 1257-1260. https://doi.org/10.1351/pac200173081257

129) WS290

Dicks, A. P., Hent, A., &Koroluk, K. J. (2018). The EcoScale as a framework for undergraduate Green Chemistry teaching and assessment. *Green Chemistry Letters and Reviews, 11*(1), 29-35. https://doi.org/10.1080/17518253.2018.1431313

130) WS293

Waked, A. E., Demmans, K. Z., Hems, R. F., Reyes, L. M., Mallov, I., Daley, E., Hoch, L. B., Mastronardi, M. L., Franier, B. J., Borduas-Dedekind, N., & Dicks, A. P. (2019). The Green Chemistry Initiative's contributions to education at the University of Toronto and beyond. *Green Chemistry Letters and Reviews, 12*(2), 187-195. https://doi.org/10.1080/17518253.2019.1609597

131) WS307

Houri, A., & Wehbe, H. (2003). Towards an environmentally friendly chemistry laboratory: Managing expired chemicals. *Green Chemistry, 5*(3), G49-G50. https://doi.org/10.1039/B305234F

132) WS316

Majid, H. A., & Ahmed, B. M. (2022). Understanding the life applications of Green Chemistry among students of the College of Education for Pure Sciences Ibn Al-Haytham in Iraq. *International Journal of Early Childhood Special Education*, *14*(3), 10008-10014.

133) WS324

Bhanumati, S., & Deep, H. (2006). Within the portals of Green Chemistry: Green strategies to manage curriculum induced hazards in chemistry laboratories. *Indian Journal of Chemistry*, *45B*, 2353-2360.

134) SP1

Stachowiak, W., Wysocki, M., & Niemczak, M. (2022). “Bitter” results: Toward sustainable synthesis of the most bitter substances, denatonium saccharinate and denatonium benzoate, starting from a popular anesthetic, lidocaine. *Journal of Chemical Education*, *99*(4), 1604-1611. https://doi.org/10.1021/acs.jchemed.1c00995

135) SP2

Pagliaro, M. (2021). “Catalysis: A unified approach”: A new course in catalysis science and technology. *Journal of Flow Chemistry*, *11*, 53-58. https://doi.org/10.1007/s41981-020-00100-x

136) SP3

Lipshutz, B. H., Boskovic, Z., Crowe, C. S., Davis, V. K., Whittemore, H. C., Vosburg, D. A., & Wenzel, A. G. (2013). “Click” and olefin metathesis chemistry in water at room temperature enabled by biodegradable micelles. *Journal of Chemical Education*, *90*(11), 1514-1517. https://doi.org/10.1021/ed300893u

137) SP4

Ribeiro, M. G. T. C., Costa, D. A., & Machado, A. A. S. C. (2010). “Green Star”: A holistic green chemistry metric for evaluation of teaching laboratory experiments. *Green Chemistry Letters and Reviews*, *3*(2), 149-159. https://doi.org/10.1080/17518251003623376

138) SP5

Chemat, F., Perino-Issartier, S., Petitcolas, E., & Fernandez, X. (2012). “In situ” extraction of essential oils by use of Dean-Stark glassware and a Vigreux column inside a microwave oven: A procedure for teaching green analytical chemistry. *Analytical and Bioanalytical Chemistry*, *404*, 679-682.

139) SP6

Scurria, A., Pagliaro, M., &Ciriminna, R. (2021). “Quick, convenient, and clean”: Advancing education in green chemistry and nanocatalysis using sol-gel catalysts under flow. *Current Research in Green and Sustainable Chemistry*, *4*, 100123. https://doi.org/10.1016/j.crgsc.2021.10012

140) SP10

Ribeiro, M. G. T. C., Costa, D. A., & Machado, A. A. S. C. (2010). Uma métrica gráfica para avaliação holística da verdura de reacções laboratoriais - “estrela verde". *Química Nova*, *33*(3), 759-764. https://doi.org/10.1590/S0100-40422010000300050

141) SP11

Ritter, S., & Abraham, L. (2022). A green and efficient cyclization of citronellal into isopulegol: A guided-inquiry organic chemistry laboratory experiment. *Journal of Chemical Education*, *99*(12), 4134-4142. https://doi.org/10.1021/acs.jchemed.2c00351

142) SP12

Johnston, A., Scaggs, J., Mallory, C., Haskett, A., Warner, D., Brown, E., Hammond, K., McCormick, M. M., & McDougal, O. M. (2013). A green approach to separate spinach pigments by column chromatography. *Journal of Chemical Education, 90*(6), 796-798. https://doi.org/10.1021/ed300315z

143) SP16

Ingold, M., Dapueto, R., Lopez, G. V., & Porcal, W. (2016). Una reacción multicomponente verde enellaboratorio de Química Orgánica. *Educación Química, 27*(1), 15-20. https://doi.org/10.1016/j.eq.2015.09.008

144) SP17

Abraham, L. (2020). A green nucleophilic aromatic substitution reaction. *Journal of Chemical Education, 97*(10), 3810-3815. https://doi.org/10.1021/acs.jchemed.0c00181

145) SP18

Ashraf, S. S., Rauf, M. A., & Abdullah, F. H. (2012). A hands-on approach to teaching environmental awareness and pollutant remediation to undergraduate chemistry students. *Research in Science & Technological Education, 30*(2), 173-184. https://doi.org/10.1080/02635143.2012.698604

146) SP19

Tallmadge, W., Homan, M., Ruth, C., & Bilek, G. (2004). A local pollution prevention group collaborates with a high school intermediate unit bringing the benefits of microscale chemistry to high school chemistry labs in the Lake Erie watershed. *Chemical Health & Safety, 11*(4), 30-33. https://doi.org/10.1016/j.chs.2004.03.011

147) SP23

Dicks, A. P. (2009). A review of aqueous organic reactions for the undergraduate teaching laboratory. *Green Chemistry Letters and Reviews, 2*(1), 9-21. https://doi.org/10.1080/17518250902820182

148) SP24

Li, B., &Eilks, I. (2021). A systematic review of the green and sustainable chemistry education research literature in mainland China. *Sustainable Chemistry and Pharmacy, 21*, 100446. https://doi.org/10.1016/j.scp.2021.100446

149) SP25

Dicks, A. P., D'eon, J. C., Morra, B., Chisu, C. K., Quinlan, K. B., & Cannon, A. S. (2019). A systems thinking department: Fostering a culture of Green Chemistry practice among students. *Journal of Chemical Education, 96*(12), 2836-2844. https://doi.org/10.1021/acs.jchemed.9b00287

150) SP26

Mooney, M., Vreugdenhil, A. J., &Shetranjiwalla, S. (2020). A toolkit of Green Chemistry and life-cycle analysis for comparative assessment in undergraduate Organic Chemistry experiments: Synthesis of (E)-stilbene. *Journal of Chemical Education, 97*(5), 1336-1344. https://doi.org/10.1021/acs.jchemed.9b00697

151) SP27

Mascarenhas, C. M. (2013). A two-step synthesis of the laundry detergent perfume additive β-citronellyltosylate. *Journal of Chemical Education, 90*(9), 1231-1234. https://doi.org/10.1021/ed300474j

152) SP28

Ogino, K. (2008). Activities of Tohoku Association of Chemical Education. *Kobunshi, 57*(4), 208-229. https://doi.org/10.1295/kobunshi.57.208

153) SP30

Holme, T. A., MacKellar, J., Constable, D. J. C., Michels, O. R., Trate, J. M., Raker, J. R., & Murphy, K. L. (2020). Adapting the Anchoring Concepts Content Map (ACCM) of ACS Exams by incorporating a theme: Merging green chemistry and organic chemistry. *Journal of Chemical Education, 97*(2), 374-382. https://doi.org/10.1021/acs.jchemed.9b00564

154) SP32

Ávila-Zárraga, J. G., Cano, S., & Gavilán-García, I. (2010). Obtención de alquenos aplicando losprincipios de la química verde. *Educación Química, 21*(2), 183-189. https://doi.org/10.1016/S0187-893X(18)30170-8

155) SP33

Linkwitz, M., &Eilks, I. (2022). An action research teacher's journey while integrating Green Chemistry into the high school chemistry curriculum. *Sustainability, 14*(17), 10621. https://doi.org/10.3390/su141710621

156) SP34

Van Arnum, S. D. (2005). An approach towards teaching Green Chemistry fundamentals. *Journal of Chemical Education, 82*(11), 1689-1692. https://doi.org/10.1021/ed082p1689

157) SP35

Goodwin, T. E. (2004). An asymptotic approach to the development of a green Organic Chemistry laboratory. *Journal of Chemical Education, 81*(8), 1187-1190. https://doi.org/10.1021/ed081p1187

158) SP36

Vanderveen, J. R., & Jessop, P. G. (2021). An exercise demonstrating the selection of greener compounds for a specified application. *Journal of Chemical Education, 98*(7), 2341-2346. https://doi.org/10.1021/acs.jchemed.1c00128

159) SP37

Liao, W., Lou, W., Jin, W., Li, S., Mao, H., &Bai, Y. (2022). An experimental modification to the preparation of di-n-butyl ether from 1-butanol for the undergraduate teaching course of organic laboratory. *World Journal of Chemical Education, 10*(1), 46-50.

160) SP40

Hamilton, A. E., Buxton, A. M., Peeples, C. J., & Chalker, J. M. (2013). An operationally simple aqueous Suzuki–Miyaura cross-coupling reaction for an undergraduate organic chemistry laboratory. *Journal of Chemical Education, 90*(11), 1509-1513. https://doi.org/10.1021/ed4002333

161) SP41

Lennon, D., Freer, A. A., Winfield, J. M., Landona, P., & Reid, N. (2002). An undergraduate teaching initiative to demonstrate the complexity and range of issues typically encountered in modern industrial chemistry. *Green Chemistry, 4*(3), 181-187. https://doi.org/10.1039/B202541H

162) SP43

Ocampo-López, C., Ramírez-Carmona, M., Rendón-Castrillón, L., & Vélez-Salazar, Y. (2019). Applied research in biotechnology as a source of opportunities for Green Chemistry start-ups. *Sustainable Chemistry and Pharmacy*, *11*, 41-45. https://doi.org/10.1016/j.scp.2018.12.005

163) SP44

Ratnani, S., &Bargujar, S. (2022). Applying Reuse and Reduce in an Undergraduate Organic Laboratory: Sustainable Practices. *Resonance*, *27*(12), 2243-2249. https://doi.org/10.1007/s12045-022-1515-y

164) SP46

Fernandes, F. L. A., Paula, N. L. M., Amorim, C. M. F. G., &Milhome, M. A. L. (2016). Abordagem da “Química Verde” por professores no contexto da disciplina de Química do ensino médio. *Eclética Química*, *41*, 66-73.

165) SP47

Loste, N., Chinarro, D., Gomez, M., Roldan, E., & Giner, B. (2020). Assessing awareness of Green Chemistry as a tool for advancing sustainability. *Journal of Cleaner Production*, *256*, 120392. https://doi.org/10.1016/j.jclepro.2020.120392

166) SP48

Gómez-Biagi, R. F., & Dicks, A. P. (2015). Assessing process mass intensity and waste via an aza-Baylis-Hillman Reaction. *Journal of Chemical Education*, *92*(11), 1938-1942. https://doi.org/10.1021/acs.jchemed.5b00249

167) SP52

Ali, Z. M., Harris, V. H., & LaLonde, R. L. (2020). Beyond Green Chemistry: Teaching social justice in Organic Chemistry. *Journal of Chemical Education*, *97*(11), 3984-3991. https://doi.org/10.1021/acs.jchemed.9b00715

168) SP53

Marques, M. V., Bisol, T. B., & Sá, M. M. (2012). Reações multicomponentes de Biginelli e de Mannich nas aulas de química orgânica experimental: Uma abordagem didática de conceitos da química verde. *Química Nova*, *35*(8), 1696-1699. https://doi.org/10.1590/S0100-40422012000800034

169) SP54

Silverman, J. R. (2016). Biobased Organic Chemistry laboratories as sustainable experiment alternatives. *Journal of Chemical Education*, *93*(10), 1679-1681. https://doi.org/10.1021/acs.jchemed.5b00706

170) SP59

Hill, J., Kumar, D. D., & Verma, R. K. (2013). Challenges for chemical education: Engaging with Green Chemistry and Environmental Sustainability. *The Chemist*, *83*(1), 24-31.

171) SP61

Bouldin, R. M., &Folchman-Wagner, Z. (2019). Chemistry of Sustainable Products: Filling the Business Void in Green-Chemistry Curricula. *Journal of Chemical Education*, *96*(4), 647-651. https://doi.org/10.1021/acs.jchemed.8b00619

172) SP64

Robinson, T. M., Box, M. C., & Gallardo-Williams, M. T. (2020). Choose your own (green) adventure: A solventless aldol condensation experiment for the Organic Chemistry laboratory. *World Journal of Chemical Education*, *8*(3), 104-106.

173) SP65

Mercer, S. M., Andraos, J., & Jessop, P. G. (2012). Choosing the greenest synthesis: A multivariate metric green chemistry exercise. *Journal of Chemical Education*, *89*(2), 215-220. https://doi.org/10.1021/ed200249v

174) SP66

Abraham, L., Stachow, L., & Du, H. (2020). Cinnamon oil: An alternate and inexpensive resource for Green Chemistry experiments in Organic Chemistry laboratory. *Journal of Chemical Education*, *97*(10), 3797-3805. https://doi.org/10.1021/acs.jchemed.0c00851

175) SP67

Ballard, J., & Mooring, S. R. (2021). Cleaning our world through Green Chemistry: Introducing high school students to the principles of Green Chemistry using a case-based learning module. *Journal of Chemical Education*, *98*(4), 1290-1295. https://doi.org/10.1021/acs.jchemed.9b00312

176) SP70

Cheney, M. L., Zaworotko, M. J., Beaton, S., & Singer, R. D. (2008). Cocrystal controlled solid-state synthesis. A Green Chemistry experiment for undergraduate Organic Chemistry. *Journal of Chemical Education*, *85*(12), 1649-1651. https://doi.org/10.1021/ed085p1649

177) SP71

Blatti, J. L. (2017). Colorful and creative chemistry: Making simple sustainable paints with natural pigments and binders. *Journal of Chemical Education*, *94*(2), 211-215. https://doi.org/10.1021/acs.jchemed.6b00591

178) SP72

Obhi, N. K., Mallov, I., Borduas-Dedekind, N., Rousseaux, S. A. L., & Dicks, A. P. (2019). Comparing industrial amination reactions in a combined class and laboratory Green Chemistry assignment. *Journal of Chemical Education*, *96*(1), 93-99. https://doi.org/10.1021/acs.jchemed.8b00578

179) SP74

Mammino, L. (2020). Computational chemistry for green design in Chemistry and Pharmacy: Building awareness in the classroom. *Sustainable Chemistry and Pharmacy*, *18*, 100283. https://doi.org/10.1016/j.scp.2020.100283

180) SP76

Keen, C., Couture, S., Meseh, N. A. E., &Sevian, H. (2020). Connecting theory to life: Learning greener electrochemistry by taking apart a common battery. *Journal of Chemical Education*, *97*(4), 934-942. https://doi.org/10.1021/acs.jchemed.9b00840

181) SP77

Santandrea, J., Kairouz, V., & Collins, S. K. (2018). Continuous Flow Science in an Undergraduate Teaching Laboratory: Photocatalytic Thiol–Ene Reaction Using Visible Light. *Journal of Chemical Education*, *95*(6), 1073-1077. https://doi.org/10.1021/acs.jchemed.7b00639

182) SP79

Altava, B., Burguete, M. I., &Luis, S. V. (2013). Educación cooperativa en Química Verde: la experiencia española. *Educación Química*, *24*, 132-138. https://doi.org/10.1016/S0187-893X(13)72506-0

183) SP80

Gutierrez, J., Santaolalla, A., Tercjak, A., Rojo, N., Encinas, D., Gomez-de-Balugera, Z., &Gallastegui, G. (2020). Creating a green chemistry lab: Towards sustainable resource management and responsible purchasing. *Sustainability*, *12*(21), 8934. https://doi.org/10.3390/su12218934

184) SP85

Kennedy, S. A. (2016). Design of a dynamic undergraduate green chemistry course. *Journal of Chemical Education*, *93*(4), 645-649. https://doi.org/10.1021/acs.jchemed.5b00432

185) SP86

Albright, H., Stephenson, C. R., & Schindler, C. S. (2021). Design of a two-week Organic Chemistry course for high school students: "Catalysis, solar energy, and green chemical synthesis". *Journal of Chemical Education*, *98*(7), 2449-2456. https://doi.org/10.1021/acs.jchemed.1c00068

186) SP87

Lin, Y., Zhao, H., Yu, F., & Yang, J. (2018). Design of an extended experiment with electrical double layer capacitors: Electrochemical energy storage devices in green chemistry. *Sustainability*, *10*(10), 3630. https://doi.org/10.3390/su10103630

187) SP89

Manchanayakage, R. (2013). Designing and incorporating green chemistry courses at a liberal arts college to increase students' awareness and interdisciplinary collaborative work. *Journal of Chemical Education*, *90*(9), 1167-1171. https://doi.org/10.1021/ed300468r

188) SP91

Klingshirn, M. A., Wyatt, A. F., Hanson, R. M., & Spessard, G. O. (2008). Determination of the formula ofa hydrate: A greener alternative. *Journal of Chemical Education*, *85*(6), 819-821. https://doi.org/10.1021/ed085p819

189) SP92

Rattanakit, P., &Maungchang, R. (2019). Determining Iron(III) concentration in a green chemistry experiment using Phyllanthus emblica (Indian Gooseberry) extract and spectrophotometry. *Journal of Chemical Education*, *96*(4), 756-760. https://doi.org/10.1021/acs.jchemed.8b00817

190) SP93

Armstrong, L. B., Rivas, M. C., Zhou, Z., Irie, L. M., Kerstiens, G. A., Robak, M. T., Douskey, M. C. &Baranger, A. M. (2019). Developing a Green Chemistry focused general chemistry laboratory curriculum: What do students understand and value aboutGreen Chemistry?.*Journal of Chemical Education*, *96*(11), 2410-2419. https://doi.org/10.1021/acs.jchemed.9b00277

191) SP94

Zowada, C., Frerichs, N., Zuin, V. G., &Eilks, I. (2020). Developing a lesson plan on conventional and green pesticides in chemistry education–a project of participatory action research. *Chemistry Education Research and Practice*, *21*(1), 141-153. https://doi.org/10.1039/C9RP00128J

192) SP96

Nuswowati, M., & Taufiq, M. (2015). Developing creative thinking skills and creative attitude through problem based green vision chemistry environment learning. *Jurnal Pendidikan IPA Indonesia*, *4*(2), 170-176.

193) SP97

Nahlik, P., Kempf, L., Giese, J., Kojak, E., & Daubenmire, P. L. (2023). Developing green chemistry educational principles by exploring the pedagogical content knowledge of secondary and pre-secondary school teachers. *Chemistry Education Research and Practice*, *24*(1), 283-298. https://doi.org/10.1039/D2RP00229A

194) SP98

Oliveira, D. B., Becker, R. W., Sirtori, C., & Passos, C. G. (2021). Development of environmental education concepts concerning chemical waste management and treatment: the training experience of undergraduate students. *Chemistry Education Research and Practice*, *22*(3), 653-661. https://doi.org/10.1039/D0RP00170H

195) SP99

Finazzi, G. A., Martins, C. N., Capelato, M. D., & Ferreira, L. H. (2016). Desenvolvimento de experimento didático de eletrogravimetria de baixo custo utilizando princípios da Química Verde. *Química Nova*, *39*(1), 112-117. https://doi.org/10.5935/0100-4042.20150149

196) SP100

Grieger, K., Schiro, A., &Leontyev, A. (2022). Development of the assessment of student knowledge of Green Chemistry principles (ASK-GCP). *Chemistry Education Research and Practice*, *23*(3), 531-544. https://doi.org/10.1039/D1RP00291K

197) SP101

Costa, N. E., Pelotte, A. L., Simard, J. M., Syvinski, C. A., & Deveau, A. M. (2012). Discovering green, aqueous Suzuki coupling reactions: Synthesis of ethyl (4-phenylphenyl) acetate, a biaryl with anti-arthritic potential. *Journal of Chemical Education*, *89*(8), 1064-1067. https://doi.org/10.1021/ed200212p

198) SP102

Landstrom, E. B., Nichol, M., Lipshutz, B. H., & Gainer, M. J. (2019). Discovery-Based SNAr experiment in water using micellar catalysis. *Journal of Chemical Education*, *96*(11), 2668-2671. https://doi.org/10.1021/acs.jchemed.9b00310

199) SP106

Knutson, C. M., Hilker, A. P., Tolstyka, Z. P., Anderson, C. B., Wilbon, P. A., Mathers, R. T., Wentzel, M. T., Perkins, A. L., & Wissinger, J. E. (2019). Dyeing to degrade: A bioplastics experiment for college and high school classrooms. *Journal of Chemical Education*, *96*(11), 2565-2573. https://doi.org/10.1021/acs.jchemed.9b00461

200) SP108

Juntunen, M. K., & Aksela, M. K. (2014). Education for sustainable development in chemistry–challenges, possibilities and pedagogical models in Finland and elsewhere. *Chemistry Education Research and Practice*, *15*(4), 488-500. https://doi.org/10.1039/C4RP00128A

201) SP109

Zuin, V. G., Eilks, I., Elschami, M., & Kümmerer, K. (2021). Education in green chemistry and in sustainable chemistry: perspectives towards sustainability. *Green Chemistry*, *23*(4), 1594-1608. https://doi.org/10.1039/D0GC03313H

202) SP110

Desmond, S., Ray, C., & Martínez, J. G. A. (2017). Educational benefits of Green Chemistry. *Physical Sciences Reviews*, *2*(8), 20170051. doi.org/10.1515/psr-2017-0051

203) SP112

Vogelzang, J., Admiraal, W. F., & Driel, J. H. (2020). Effects of Scrum methodology on students' critical scientific literacy: the case of Green Chemistry. *Chemistry Education Research and Practice*, *21*(3), 940-952. https://doi.org/10.1039/D0RP00066C

204) SP115

Karpudewan, M., Ismail, Z., & Roth, W. M. (2012). Ensuring sustainability of tomorrow through green chemistry integrated with sustainable development concepts (SDCs). *Chemistry Education Research and Practice*, *13*(2), 120-127. https://doi.org/10.1039/C1RP90066H

205) SP117

Roloff, F. B., & Marques, C. A. (2014). Questões ambientais na voz dos formadores de professores de Química em disciplinas de cunho ambiental. *Química Nova*, *37*(3), 549-555. https://doi.org/10.5935/0100-4042.20140091

206) SP118

Ma, J., &Shengli, H. (2020). Evaluating Chinese secondary school students' understanding of Green Chemistry. *Science Education International*, *31*(2), 209-219. https://doi.org/10.33828/sei.v31.i2.11

207) SP119

Silverman, J. R., & Hudson, R. (2020). Evaluating feedstocks, processes, and products in the teaching laboratory: a framework for students to use metrics to design greener chemistry experiments. *Journal of Chemical Education*, *97*(2), 390-401. https://doi.org/10.1021/acs.jchemed.9b00292

208) SP120

Pohl, N. L. B., Streff, J. M., &Brokman, S. (2012). Evaluating sustainability: Soap versus biodiesel production from plant oils. *Journal of Chemical Education*, *89*(8), 1053-1056. https://doi.org/10.1021/ed100451d

209) SP122

Slater, C. S., Hesketh, R. P., Fichana, D., Henry, J., Flynn, A. M., & Abraham, M. (2007). Expanding the frontiers for chemical engineers in green engineering education. *International Journal of Engineering Education*, *23*(2), 309-324.

210) SP123

Moura, A. L., Silva, J. F., Freitas, J. J. R., Freitas, J. C. R., & Freitas Filho, J. R. (2019). Experienciando uma síntese one-pot de 1, 2, 4-oxadiazol mediada por forno de micro-ondas: Química Verde em foco. *PeriódicoTchê Química*, *16*(32), 820-832.

211) SP124

Ginzburg, A. L., Check, C. E., Hovekamp, D. P., Sillin, A. N., Brett, J., Eshelman, H., & Hutchison, J. E. (2019). Experiential learning to promote systems thinking in chemistry: Evaluating and designing sustainable products in a polymer immersion lab. *Journal of Chemical Education*, *96*(12), 2863-2871. https://doi.org/10.1021/acs.jchemed.9b00336

212) SP125

Savec, V. F., &Mlinarec, K. (2021). Experimental work in science education from Green Chemistry perspectives: A systematic literature review using PRISMA. *Sustainability*, *13*(23), 12977. https://doi.org/10.3390/su132312977

213) SP127

Gormong, E. A., Wentzel, M. T., Cao, B., Kundel, L. N., Reineke, T. M., & Wissinger, J. E. (2021). Exploring Divergent Green Reaction Media for the Copolymerization of Biobased Monomers in the Teaching Laboratory. *Journal of Chemical Education*, *98*(2), 559-566. https://doi.org/10.1021/acs.jchemed.0c00688

214) SP128

Hudson, R., Leaman, D., Kawamura, K. E., Esdale, K. N., Glaisher, S., Bishop, A., & Katz, J. L. (2016). Exploring green chemistry metrics with interlocking building block molecular models. *Journal of Chemical Education*, *93*(4), 691-694. https://doi.org/10.1021/acs.jchemed.5b00696

215) SP130

Penteado, J. C., & Masini, J. C. (2011). Exploring liquid sequential injection chromatography to teach fundamentals of separation methods: A very fast analytical chemistry experiment. *Journal of Chemical Education*, *88*(2), 235-238. https://doi.org/10.1021/ed100048r

216) SP131

Silverman, J. R. (2021). Exploring sustainability metrics in General Chemistry using intensive and extensive properties of matter. *Journal of Chemical Education*, *98*(9), 2741-2745. https://doi.org/10.1021/acs.jchemed.1c00113

217) SP132

Paschalidou, K., Salta, K., &Koulougliotis, D. (2022). Exploring the connections between systems thinking and Green Chemistry in the context of Chemistry Education: A scoping review. *Sustainable Chemistry and Pharmacy*, *29*, 100788. https://doi.org/10.1016/j.scp.2022.100788

218) SP133

Karpudewan, M., &Mathanasegaran, K. (2018). Exploring the use of context-based green chemistry experiments in understanding the effects of concentration and catalyst on the rate of reaction. *Asia-Pacific Forum on Science Learning & Teaching*, *19*(2).

219) SP135

Purcell, S. C., Pande, P., Lin, Y., Rivera, E. J., Paw U, L., Smallwood, L. M., Kerstiens, G. A., Armstrong, L. B., Robak, M. T., Baranger, A. M., &Douskey, M. C. (2016). Extraction and antibacterial properties of thyme leaf extracts: authentic practice of Green Chemistry. *Journal of Chemical Education*, *93*(8), 1422-1427. https://doi.org/10.1021/acs.jchemed.5b00891

220) SP136

Pires, T. C. M., Ribeiro, M. G. T., & Machado, A. A. S. C. (2018). Extração do R-(+)-limoneno a partir das cascas de laranja: avaliação e otimização da verdura dos processos de extração tradicionais. *Química Nova*, *41*(3), 355-365. https://doi.org/10.21577/0100-4042.20170139

221) SP137

Summerton, L., Hurst, G. A., & Clark, J. H. (2018). Facilitating active learning within Green Chemistry. *Current Opinion in Green and Sustainable Chemistry*, *13*, 56-60. https://doi.org/10.1016/j.cogsc.2018.04.002

222) SP138

Buckley, H. L., Beck, A. R., Mulvihill, M. J., &Douskey, M. C. (2013). Fitting it all in: adapting a green chemistry extraction experiment for inclusion in an undergraduate analytical laboratory. *Journal of Chemical Education*, *90*(6), 771-774. https://doi.org/10.1021/ed300510s

223) SP140

Wang, Y., Zhang, M., & Hu, Y. (2010). Foam fractionation of lycopene: An undergraduate chemistry experiment. *Journal of Chemical Education*, *87*(5), 510-511. https://doi.org/10.1021/ed8001682

224) SP141

Karpudewan, M., Ismail, Z., & Roth, W. M. (2012). Fostering pre-service teachers' self-determined environmental motivation through Green Chemistry experiments. *Journal of Science Teacher Education*, *23*(6), 673-696. https://doi.org/10.1007/s10972-012-9298-8

225) SP143

Haley, R. A., Ringo, J. M., Hopgood, H., Denlinger, K. L., Das, A., & Waddell, D. C. (2018). Graduate student designed and delivered: An upper-level online course for undergraduates in green chemistry and sustainability. *Journal of Chemical Education*, *95*(4), 560-569. https://doi.org/10.1021/acs.jchemed.7b00730

226) SP144

Płotka-Wasylka, J., Mohamed, H. M., Kurowska-Susdorf, A., Dewani, R., Fares, M. Y., &Andruch, V. (2021). Green analytical chemistry as an integral part of sustainable education development. *Current Opinion in Green and Sustainable Chemistry*, *31*, 100508. https://doi.org/10.1016/j.cogsc.2021.100508

227) SP145

Lapanantnoppakhun, S., Tengjaroensakul, U., Mungkornasawakul, P., Puangpila, C., Kittiwachana, S., Saengtempiam, J., & Hartwell, S. K. (2020). Green analytical chemistry experiment: Quantitative analysis of iron in supplement tablets with vis spectrophotometry using tea extract as a chromogenic agent. *Journal of Chemical Education*, *97*(1), 207-214. https://doi.org/10.1021/acs.jchemed.9b00530

228) SP146

Kurowska-Susdorf, A., Zwierżdżyński, M., Bevanda, A. M., Talić, S., Ivanković, A., &Płotka-Wasylka, J. (2019). Green Analytical Chemistry: Social dimension and teaching. *Trends in Analytical Chemistry*, *111*, 185-196. https://doi.org/10.1016/j.trac.2018.10.022

229) SP150

Morsch, L. A., Deak, L., Tiburzi, D., Schuster, H., & Meyer, B. (2014). Green aqueous Wittig reaction: Teaching green chemistry in organic teaching laboratories. *Journal of Chemical Education*, *91*(4), 611-614. https://doi.org/10.1021/ed400408k

230) SP151

Bektesevic, S., Beier, J. C., Chen, L., Eghbali, N., King, S., Levitin, G., Mehta, G., Mullins, R. J., Reiner, J. L., Weikel, R.; Xie, S., & Gunn, E. (2005). Green challenges: student perspectives from the 2004 ACS-PRF Summer School on Green Chemistry. *Green Chemistry*, *7*(6), 403-407. https://doi.org/10.1039/B501692B

231) SP153

Machado, A. A. S. C. (2011). Da génese ao ensino da Química Verde. *Química Nova*, *34*(3), 535-543. https://doi.org/10.1590/S0100-40422011000300029

232) SP155

Lenardão, E. J., Freitag, R. A., Dabdoub, M. J., Batista, A. C. F., & Silveira, C. C. (2003). " Green Chemistry": Os 12 princípios da Química Verde e sua inserção nas atividades de ensino e pesquisa. *Química Nova*, *26*(1), 123-129. https://doi.org/10.1590/S0100-40422003000100020

233) SP159

Borreda, L. M., & Peña, A. V. (2016). Química Verde y Sostenibilidadenlaeducaciónencienciasen secundaria. *Enseñanza de LasCiencias*, *34*(2), 25-42. http://dx.doi.org/10.5565/rev/ensciencias.1688

234) SP160

Gross, E. M. (2013). Green Chemistry and sustainability: An undergraduate course for science and nonscience majors. *Journal of Chemical Education*, *90*(4), 429-431. https://doi.org/10.1021/ed200756z

235) SP161

Silva Júnior, C. A. D., Jesus, D. P., &Girotto Júnior, G. (2022). Química Verde e a Tabela Periódica de Anastas e Zimmerman: Tradução e alinhamentos com o Desenvolvimento Sustentável. *Química Nova*, *45*(8), 1010-1019. https://doi.org/10.21577/0100-4042.20170893

236) SP162

Zandonai, D. P., Saqueto, K. C., Abreu, S. C. S. R., Lopes, A. P., & Zuin, V. G. (2014). Química Verde e formação de profissionais do campo da Química: Relato de uma experiência didática para além do laboratório de ensino. *Revista Virtual de Química*, *6*(1), 73-84. https://doi.org/10.5935/1984-6835.20140007

237) SP163

Johnson, S., Meyers, M., Hyme, S., &Leontyev, A. (2020). Green Chemistry coverage in Organic Chemistry textbooks. *Journal of Chemical Education*, *97*(2), 383-389. https://doi.org/10.1021/acs.jchemed.9b00397

238) SP164

Edgar, L. J. G., Koroluk, K. J., Golmakani, M., & Dicks, A. P. (2014). Green Chemistry decision-making in an upper-level undergraduate organic laboratory. *Journal of Chemical Education*, *91*(7), 1040-1043. https://doi.org/10.1021/ed400639a

239) SP165

Carangue, D. G., Geverola, I. J. R., Jovero, M., Lopez, E. N. A. B., Pizaña, A., Salmo, J., Silvosa, J., & Picardal, J. (2021). Green Chemistry Education among senior high school chemistry teachers: Knowledge, perceptions, and level of integration. *Recoletos Multidisciplinary Research Journal*, *9*(2), 15-33. https://doi.org/10.32871/rmrj2109.02.04

240) SP166

Wang, M. Y., Li, X. Y., & He, L. N. (2018). Green Chemistry education and activity in China. *Current Opinion in Green and Sustainable Chemistry*, *13*, 123-129. https://doi.org/10.1016/j.cogsc.2018.07.001

241) SP167

Jovero, M. B., &Picardal, J. P. (2022). Green Chemistry Education in the emerging economies in Asia. *Jurnal Pendidikan IPA Indonesia*, *11*(4), 600-610.

242) SP168

Kolopajlo, L. (2017). Green Chemistry Education in the Middle East. *Physical Sciences Reviews*, *2*(6). doi.org/10.1515/psr-2017-0002

243) SP169

Haack, J. A., & Hutchison, J. E. (2016). Green Chemistry Education: 25 years of progress and 25 years ahead. *ACS Sustainable Chemistry & Engineering*, *4*(11), 5889–5896. https://doi.org/10.1021/acssuschemeng.6b02069

244) SP170

Summerton, L., Hunt, A. J., & Clark, J. H. (2013). Green Chemistry for postgraduates. *EducaciónQuímica*, *24*, 150-155. https://doi.org/10.1016/S0187-893X(13)72508-4

245) SP174

Płotka-Wasylka, J., Kurowska-Susdorf, A., Sajid, M., Guardia, M., Namieśnik, J., &Tobiszewski, M. (2018). Green Chemistry in higher education: State of the art, challenges, and future trends. *ChemSusChem*, *11*(17), 2845-2858. https://doi.org/10.1002/cssc.201801109

246) SP176

Deligeorgiev, T., Gadjev, N., Vasilev, A., Kaloyanova, S., Vaquero, J. J., & Alvarez-Builla, J. (2010). Green chemistry in organic synthesis. *Mini-Reviews in Organic Chemistry*, *7*, 44-53.

247) SP177

Linkwitz, M., &Eilks, I. (2019). Green Chemistry in der schule: Unterricht und experimentezurnachhaltigkeit. *Chemie in Unserer Zeit*, *53*(6), 412-420. https://doi.org/10.1002/ciuz.201900048

248) SP180

Reed, S. M., & Hutchison, J. E. (2000). Green chemistry in the organic teaching laboratory: an environmentally benign synthesis of adipic acid. *Journal of Chemical Education*, *77*(12), 1627-1629. https://doi.org/10.1021/ed077p1627

249) SP183

Kolopajlo, L. (2017). Green Chemistry pedagogy. *Physical Sciences Reviews*, *2*(2). doi.org/10.1515/psr-2016-0076

250) SP184

Redhana, I. W., &Suardana, I. N. (2021). Green Chemistry practicums at chemical equilibrium Shift to Enhance Students' Learning Outcomes. *International Journal of Instruction*, *14*(1), 691-708. https://doi.org/10.29333/iji.2021.14142a

251) SP185

Marques, C. A., Marcelino, L. V., Dias, E. D. S., Rüntzel, P. L., Souza, L. C. A. B., & Machado, A. (2020). Green Chemistry teaching for sustainability in papers published by the Journal of Chemical Education. *Química Nova*, *43*(10), 1510-1521. https://doi.org/10.21577/0100-4042.20170612

252) SP186

Andraos, J., &Dicks, A. P. (2012). Green Chemistry Teaching in higher education: A review of effective practices. *Chemistry Education Research and Practice*, *13*(2), 69-79. https://doi.org/10.1039/C1RP90065J

253) SP187

Alfonsi, K., Colberg, J., Dunn, P. J., Fevig, T., Jennings, S., Johnson, T. A., Kleine, H. P.; Knight, C.; Nagy, M. A.; Perry, D. A.; & Stefaniak, M. (2008). Green Chemistry tools to influence a Medicinal Chemistry and research chemistry basedorganisation. *Green Chemistry*, *10*(1), 31-36. https://doi.org/10.1039/B711717E

254) SP190

Sweileh, J. A. (2021). Green Chemistry: A Simple Manual Apparatus for Potentiometric and Conductometric Micro-Titration of Small Samples for the Educational Laboratory. *Jordan Journalof Chemistry*, *16*(1), 13-20.

255) SP196

Reyes-Sánchez, L. B. (2012). Aporte de laQuímica Verde a laconstrucción de una ciencia socialmente responsable. *Educación Química*, *23*(2), 222-229. https://doi.org/10.1016/S0187-893X(17)30113-1

256) SP197

Cirillo, P. F., Caccavale, A., &DeLuna, A. (2021). Green Fischer indole synthesis using a steroidal ketone in a conductively heated sealed-vessel reactor for the advanced undergraduate laboratory. *Journal of Chemical Education*, *98*(2), 567-571. https://doi.org/10.1021/acs.jchemed.0c00991

257) SP198

Prescott, S. (2013). Green Goggles: Designing and teaching a General Chemistry course to nonmajors using a Green Chemistry approach. *Journal of Chemical Education*, *90*(4), 423-428. https://doi.org/10.1021/ed300538d

258) SP199

Miller, J. L., Wentzel, M. T., Clark, J. H., & Hurst, G. A. (2019). Green Machine: A card game introducing students to systems thinking in Green Chemistry by strategizing the creation of a recycling plant. *Journal of Chemical Education*, *96*(12), 3006-3013. https://doi.org/10.1021/acs.jchemed.9b00278

259) SP200

Linkwitz, M., Zidny, R., Nida, S., Seeger, L., Belova, N., &Eilks, I. (2022). Versuchemit der Mikrowelle: Grüne organische Chemie für Studium und Schule. *Chemie in Unserer Zeit*, *56*(5), 325-329. https://doi.org/10.1002/ciuz.202000069

260) SP201

Geiger, H. C., & Donohoe, J. S. (2012). Green oxidation of menthol enantiomers and analysis by circular dichroism spectroscopy: An advanced Organic Chemistry laboratory. *Journal of Chemical Education*, *89*(12), 1572-1574. https://doi.org/10.1021/ed2008608

261) SP202

Ballard, C. E. (2013). Green Oxidative homocoupling of 1-methylimidazole. *Journal of Chemical Education*, *90*(10), 1368-1372. https://doi.org/10.1021/ed200890f

262) SP203

Ballard, C. E. (2011). Green reductive homocoupling of bromobenzene. *Journal of Chemical Education*, *88*(8), 1148-1151. https://doi.org/10.1021/ed100945h

263) SP204

Martinez, A. R., Rodríguez-García, I., & López-Martínez, J. L. (2022). Green reductive regioselective opening of epoxides: A Green Chemistry laboratory experiment. *Journal of Chemical Education*, *99*(7), 2710-2714. https://doi.org/10.1021/acs.jchemed.2c00409

264) SP206

Lees, M., Wentzel, M. T., Clark, J. H., & Hurst, G. A. (2020). Green Tycoon: A mobile application game to introduce biorefining principles in Green Chemistry. *Journal of Chemical Education*, *97*(7), 2014-2019. https://doi.org/10.1021/acs.jchemed.0c00363

265) SP207

Nishimura, R. T., Giammanco, C. H., &Vosburg, D. A. (2010). Green, enzymatic syntheses of divanillin and diapocynin for the Organic, Biochemistry, or advanced General Chemistry laboratory. *Journal of Chemical Education*, *87*(5), 526-527. https://doi.org/10.1021/ed8001607

266) SP209

Eilks, I., &Linkwitz, M. (2022). Greening the chemistry curriculum as a contribution to Education for Sustainable Development: When and how to start?.*Current Opinion in Green and Sustainable Chemistry*, *37*, 100662. https://doi.org/10.1016/j.cogsc.2022.100662

267) SP212

Ribeiro, M. G. T. C., & Machado, A. A. S. C. (2013). Holistic metrics for assessment of the greenness of chemical reactions in the context of chemical education. *Journal of Chemical Education*, *90*(4), 432-439. https://doi.org/10.1021/ed300232w

268) SP214

Galicia, M. L. M., Martínez, J. O., Reyes-Sánchez, L. B., Hernández, O. M., Razo, G. A. A., Valdivia, A. O., & Ruvalcaba, R. M. (2011). ¿Quétan verde es unexperimento?.*Educación Química*, *22*(3), 240-248. https://doi.org/10.1016/S0187-893X(18)30140-X

269) SP215

Mio, M. J. (2017). How the principles of Green Chemistry changed the way Organic Chemistry labs are taught at the University of Detroit Mercy. *Physical Sciences Reviews*, *2*(2). doi.org/10.1515/psr-2016-0077

270) SP216

Lokteva, E. (2018). How to motivate students to use Green Chemistry approaches in everyday research work: Lomonosov Moscow State University, Russia. *Current Opinion in Green and Sustainable Chemistry*, *13*, 81-85. https://doi.org/10.1016/j.cogsc.2018.04.021

271) SP218

Pinto, A. C., Zucco, C., Andrade, J. B., & Vieira, P. C. (2009). Recursos humanos para novos cenários. *Química Nova*, *32(3)*, 567-570. https://doi.org/10.1590/S0100-40422009000300002

272) SP219

Riandi, R., Permanasari, A., &Novia, N. (2022). Implementation of Biotechnology in Education towards Green Chemistry teaching: A bibliometrics study and research trends. *Moroccan Journal of Chemistry*, *10*(3), 417-427. https://doi.org/10.48317/IMIST.PRSM/morjchem-v10i3.33060

273) SP221

Nuswowati, M., Susilaningsih, E., Ramlawati, R., &Kadarwati, S. (2017). Implementation of problem-based learning with green chemistry vision to improve creative thinking skill and students' creative actions. *Jurnal Pendidikan IPA Indonesia*, *6*(2), 221-228.

274) SP222

Graham, K. J., Jones, T. N., Schaller, C. P., & McIntee, E. J. (2014). Implementing a student-designed Green Chemistry laboratory project in Organic Chemistry. *Journal of Chemical Education*, *91*(11), 1895-1900. https://doi.org/10.1021/ed5000394

275) SP223

Kairouz, V., Charette, A. B., & Collins, S. K. (2021). Implementing flow Chemistry in Education: the NSERC CREATE Program in continuous flow science. *Journal of Flow Chemistry*, *11*, 13-17. https://doi.org/10.1007/s41981-020-00129-y

276) SP224

Gawlik-Kobylińska, M., Walkowiak, W., & Maciejewski, P. (2020). Improvement of a sustainable world through the application of innovative didactic tools in green chemistry teaching: A review. *Journal of Chemical Education*, *97*(4), 916-924. https://doi.org/10.1021/acs.jchemed.9b01038

277) SP225

Slater, C. S., & Hesketh, R. P. (2004). Incorporating Green Engineering into a material and energy balance course. *Chemical Engineering Education*, *38*, 48-53.

278) SP226

Mammino, L. (2018). Incorporating information on Green Chemistry into Theoretical Chemistry courses. *Current Opinion in Green and Sustainable Chemistry*, *13*, 76-80. https://doi.org/10.1016/j.cogsc.2018.04.001

279) SP228

Aubrecht, K. B., Bourgeois, M., Brush, E. J., MacKellar, J., & Wissinger, J. E. (2019). Integrating Green Chemistry in the curriculum: Building student skills in systems thinking, safety, and sustainability. *Journal of Chemical Education*, *96*(12), 2872-2880. https://doi.org/10.1021/acs.jchemed.9b00354

280) SP229

Ang, J. W. J. (2021). Integrating Green Chemistry into teaching laboratories: Aqueous Suzuki–Miyauracross-coupling reaction using a recyclable fluorousprecatalyst. *Journal of Chemical Education*, *98*(1), 203-207. https://doi.org/10.1021/acs.jchemed.0c00072

281) SP230

Sheppard, C. (2021). Integration of laboratory safety and Green Chemistry: Implementation in a sophomore seminar and an advanced organic laboratory. *Journal of Chemical Education*, *98*(1), 78-83. https://doi.org/10.1021/acs.jchemed.0c00091

282) SP231

Hurst, G. A., Slootweg, J. C., Balu, A. M., Climent-Bellido, M. S., Gomera, A., Gomez, P., Luque, R.; Mammino, L.; Spanevello, R. A.; Saito, K.; & Ibanez, J. G. (2019). International perspectives on Green and Sustainable Chemistry

Education via systems thinking. *Journal of Chemical Education*, *96*(12), 2794-2804. https://doi.org/10.1021/acs.jchemed.9b00341

283) SP232

Biswas, R., & Mukherjee, A. (2017). Introducing the concept of green synthesis in the undergraduate laboratory: Two-step synthesis of 4-bromoacetanilide from aniline. *Journal of Chemical Education*, *94*(9), 1391-1394. https://doi.org/10.1021/acs.jchemed.6b00749

284) SP234

Lasker, G. A., Simcox, N. J., Mellor, K. E., Mullins, M. L., Nesmith, S. M., Bergen, S., & Anastas, P. T. (2019). Introducing toxicology into the undergraduate chemistry laboratory using safety data sheets and sunscreen activities. *Journal of Chemical Education*, *96*(4), 720-724. https://doi.org/10.1021/acs.jchemed.8b00408

285) SP235

Grant, S., Freer, A. A., Winfield, J. M., Gray, C., & Lennon, D. (2005). Introducing undergraduates to Green Chemistry: An interactive teaching exercise. *Green Chemistry*, *7*(3), 121-128. https://doi.org/10.1039/B412664E

286) SP237

Filgueiras, M. F., & Borges, E. M. (2022). Iron quantification in dietary supplements using four colorimetric assays. *Journal of Chemical Education*, *99*(5), 2067-2078. https://doi.org/10.1021/acs.jchemed.1c00869

287) SP241

Panzarasa, G. (2018). Just add luminol to turn the spotlight on Radziszewski amidation. *ACS Ômega*, *3*(10), 13179-13182. https://doi.org/10.1021/acsomega.8b02208

288) SP242

Kapassa, M., Abeliotis, K., &Scoullos, M. (2013). Knowledge, beliefs and attitudes of secondary school students on renewable feedstocks/biomass: The case of Greece. *Environment, development and sustainability*, *15*, 101-116. https://doi.org/10.1007/s10668-012-9377-1

289) SP243

Yeerum, C., Ayutthaya, P. I, Kesonkan, K., Kiwfo, K., Suteerapataranon, S., Panitsupakamol, P., Paengnakorn, P., Chinwong, D., Chinwong, S., Saenjum, C., Vongboot, M., &Grudpan, K. (2022). Lab-at-home: Hands-on green Analytical Chemistry laboratory for new normal experimentation. *Sustainability*, *14*(6), 3314. https://doi.org/10.3390/su14063314

290) SP244

Zidny, R., &Eilks, I. (2022). Learning about pesticide use adapted from ethnoscience as a contribution to Green and Sustainable Chemistry Education. *Education Sciences*, *12*(4), 227. https://doi.org/10.3390/educsci12040227

291) SP245

Ranu, B. C., Adak, L., & Ghosh, T. (2022). Learning Green Chemistry and its principles from Nature's process and development of green procedures mimicking nature. *Chemistry Teacher International*, *4*(2), 127-141. doi.org/10.1515/cti-2021-0023

292) SP248

Duangpummet, P., Chaiyen, P., &Chenprakhon, P. (2019). Lipase-catalyzed esterification: An inquiry-based laboratory activity to promote high school students' understanding and positive perceptions of green chemistry. *Journal of Chemical Education*, *96*(6), 1205-1211. https://doi.org/10.1021/acs.jchemed.8b00855

293) SP249

Karpudewan, M., &Kulandaisamy, Y. (2018). Malaysian teachers' insights into implementing green chemistry experiments in secondary schools. *Current Opinion in Green and Sustainable Chemistry*, *13*, 113-117. https://doi.org/10.1016/j.cogsc.2018.06.015

294) SP250

Wixtrom, A., Buhler, J., & Abdel-Fattah, T. (2014). Mechanochemical synthesis of two polymorphs of the tetrathiafulvalene-chloranil charge transfer salt: an experiment for Organic Chemistry. *Journal of Chemical Education*, *91*(8), 1232-1235. https://doi.org/10.1021/ed4002267

295) SP251

Ribeiro, M. G. T. C., & Machado, A. A. S. C. (2011). Metal− Acetylacetonate synthesis experiments: which is greener?.*Journal of Chemical Education*, *88*(7), 947-953. https://doi.org/10.1021/ed100174f

296) SP252

Clark, R. A., Stock, A. E., &Zovinka, E. P. (2012). Metalloporphyrins as oxidation catalysts: Moving toward “greener” chemistry in the Inorganic Chemistry laboratory. *Journal of Chemical Education*, *89*(2), 271-275. https://doi.org/10.1021/ed100609f

297) SP253

Arroyo-Carmona, R. E., Bernès, S., González-Vergara, E., Méndez-Rojas, M. A., & Pérez-Benítez, A. (2012). Síntesis microquímica y microelectroquímica de acetato de cobre (II) a partir de vinagre: Un ejemplo de Química Verde. *EducaciónQuímica*, *23*, 127-135. https://doi.org/10.1016/S0187-893X(17)30144-1

298) SP254

Singh, M. M., Szafran, Z., & Pike, R. M. (1999). Microscale Chemistry and Green Chemistry: Complementary pedagogies. *Journal of Chemical Education*, *76*(12), 1684-1686. https://doi.org/10.1021/ed076p1684

299) SP255

Martin, E., & Kellen-Yuen, C. (2007). Microwave-assisted rganic synthesis in the organic teaching lab: A simple, greener Wittig reaction. *Journal of Chemical Education*, *84*(12), 2004-2006. https://doi.org/10.1021/ed084p2004

300) SP256

Mullins, J. J., & Prusinowski, A. F. (2019). Microwave-Promoted Synthesis of a Carbocyclic Curcuminoid: An Organic Chemistry Laboratory Experiment. *Journal of Chemical Education*, *96*(3), 606-609. https://doi.org/10.1021/acs.jchemed.8b00662

301) SP257

VanderZwaag, J., Du, H., & Abraham, L. (2021). Motivating and supporting undergraduate research through Green Chemistry: Experiences at a small liberal arts university. *Journal of Chemical Education*, *98*(3), 824-832. https://doi.org/10.1021/acs.jchemed.0c01084

302) SP258

Amaris, Z. N., Freitas, D. N., Mac, K., Gerner, K. T., Nameth, C., & Wheeler, K. E. (2017). Nanoparticle synthesis, characterization, and ecotoxicity: A research-based set of laboratory experiments for a general chemistry course. *Journal of Chemical Education*, *94*(12), 1939-1945. https://doi.org/10.1021/acs.jchemed.7b00369

303) SP259

Ribeiro, M. G. T. C., & Machado, A. A. S. C. (2012). Novas métricas holísticas para avaliação da verdura de reações de síntese em laboratório. *Química Nova*, *35*(9), 1879-1883. https://doi.org/10.1590/S0100-40422012000900031

304) SP261

Schwarzman, M. R., & Buckley, H. L. (2019). Not just an academic exercise: Systems thinking applied to designing safer alternatives. *Journal of Chemical Education*, *96*(12), 2984-2992. https://doi.org/10.1021/acs.jchemed.9b00345

305) SP263

Tsakeni, M. (2018). Opportunities for teaching Sustainable Development through the chemistry component of CAPS physical sciences. *African Journal of Research in Mathematics, Science and Technology Education*, *22*(1), 125-136. https://doi.org/10.1080/18117295.2018.1446498

306) SP264

Chan, J. M., Zhang, X., Brennan, M. K., Sardon, H., Engler, A. C., Fox, C. H., Frank, C. W., Waymouth, R. M.& Hedrick, J. L. (2015). Organocatalytic ring-opening polymerization of trimethylene carbonate to yield a biodegradable polycarbonate. *Journal of Chemical Education*, *92*(4), 708-713. https://doi.org/10.1021/ed500595k

307) SP265

Slater, C. S., &Savelski, M. J. (2011). Partnerships with the pharmaceutical industry to promote sustainability. *World Transactions on Engineering and Technology Education*, *9*(1), 6-11.

308) SP266

Goes, L. F., Leal, S. H., Corio, P., & Fernandez, C. (2013). Aspectos do conhecimento pedagógico do conteúdo de Química Verde em professores universitários de Química. *Educación Química*, *24*, 113-123. https://doi.org/10.1016/S0187-893X(13)72504-7

309) SP267

Rosita, A., Sudarmin, S., &Marwoto, P. (2014). Perangkat pembelajaranproblem based learning berorientasiGreen Chemistry materihidrolisis garam untukmengembangkan soft skill konservasisiswa. *Jurnal Pendidikan IPA Indonesia*, *3*(2), 134-139.

310) SP270

Sharma, R. K., Gulati, S., & Mehta, S. (2012). Preparation of gold nanoparticles using tea: A Green Chemistry experiment. *Journal of Chemical Education*, *89*(10), 1316-1318. https://doi.org/10.1021/ed2002175

311) SP273

Koulougliotis, D., Antonoglou, L., & Salta, K. (2021). Probing Greek secondary school students' awareness of Green Chemistry principles infused in context-based projects related to socio-scientific issues. *International Journal of Science Education*, *43*(2), 298-313. https://doi.org/10.1080/09500693.2020.1867327

312) SP274

Salgado-Chavarría, D., & Palacios-Alquisira, J. (2021). Problem-based learning approach to review the principles of Green Chemistry applied to a polycondensation reaction. *Science Education International*, *32*(2), 107-113. https://doi.org/10.33828/sei.v32.i2.3

313) SP275

Karpudewan, M., Ismail, Z., & Roth, W. M. (2012). Promoting pro-environmental attitudes and reported behaviors of Malaysian pre-service teachers using Green Chemistry experiments. *Environmental Education Research*, *18*(3), 375-389. https://doi.org/10.1080/13504622.2011.622841

314) SP277

Cheung, L. L. W., Styler, S. A., & Dicks, A. P. (2010). Rapid and convenient synthesis of the 1, 4-dihydropyridine privileged structure. *Journal of Chemical Education*, *87*(6), 628-630. https://doi.org/10.1021/ed100171g

315) SP278

Rajchakit, U., &Limpanuparb, T. (2016). Rapid blue bottle experiment: autoxidation of benzoin catalyzed by redox indicators. *Journal of Chemical Education*, *93*(8), 1490-1494. https://doi.org/10.1021/acs.jchemed.6b00018

316) SP279

Zhang, S., Xu, R., Zhu, H., Kern, R. E. B., Spillman, M. G., Chen, E. S., Deng, Y., Shen, S., Kwag, S., Clayton, E. A., Mendelsohn, M. M., Ozturk, A. N., Burnham, A. E., Erlinger, G. M., Pederson, J. P., Gelbaum, C.; Liotta, C. L., & Pollet, P. (2021). Reaction of diphenyldiazomethane with benzoic acids in batch and continuous flow. *Journal of Chemical Education*, *98*(2), 469-477. https://doi.org/10.1021/acs.jchemed.0c01044

317) SP281

Duarte, R. C. C., Ribeiro, M. G. T. C., & Machado, A. A. S. C. (2017). Reaction scale and Green Chemistry: Microscale or macroscale, which is greener?.*Journal of Chemical Education*, *94*(9), 1255-1264. https://doi.org/10.1021/acs.jchemed.7b00056

318) SP283

Weires, N. A., Johnston, A., Warner, D. L., McCormick, M. M., Hammond, K., & McDougal, O. M. (2011). Recycling of waste acetone by fractional distillation. *Journal of Chemical Education*, *88*(12), 1724-1726. https://doi.org/10.1021/ed2001158

319) SP285

Chapman, S., Herniman, J. M., Langley, G. J., Raja, R., & Logothetis, T. A. (2019). Redox aluminophosphates: Applying fundamental undergraduate theory to solve global challenges in the chemical industry. *Journal of Chemical Education*, *96*(12), 2937-2946. https://doi.org/10.1021/acs.jchemed.9b00288

320) SP286

Collins, T. J. (2017). Review of the twenty-three year evolution of the first university course in Green Chemistry: Teaching future leaders how to create sustainable societies. *Journal of Cleaner Production*, *140*, 93-110. https://doi.org/10.1016/j.jclepro.2015.06.136

321) SP289

Mammino, L. (2019). Roles of systems thinking within green chemistry education: reflections from identified challenges in a disadvantaged context. *Journal of Chemical Education*, *96*(12), 2881-2887. https://doi.org/10.1021/acs.jchemed.9b00302

322) SP293

Vogelzang, J., Admiraal, W. F., & van Driel, J. H. (2021). Scrum methodology in context-based secondary chemistry classes: Effects on students' achievement and on students' perceptions of affective and metacognitive dimensions of their learning. *Instructional Science*, *49*, 719-746. https://doi.org/10.1007/s11251-021-09554-5

323) SP295

Sampaio, C. I., Sousa, L. F., & Dias, A. M. (2020). Separation of anthocyaninic and nonanthocyaninic flavonoids by liquid–liquid extraction based on their acid–base properties: A Green Chemistry approach. *Journal of Chemical Education*, *97*(12), 4533-4539. https://doi.org/10.1021/acs.jchemed.0c00139

324) SP296

Martins, R. C., Bernardi, F., Kreve, Y. D., Nicolini, K. P., & Nicolini, J. (2017). Coleção de propostas utilizando produtos naturais para a introdução ao tema ácido-base no Ensino Médio (Parte I). *Educación Química*, *28*(4), 246-253. https://doi.org/10.1016/j.eq.2017.03.005

325) SP297

Contreras-Cruz, D. A., Cantú-Reyes, M., García-Sánchez, J. M., Peña-Ortíz, D., Sánchez-Carmona, M. A., & Miranda, L. D. (2019). Shedding blue light on the undergraduate laboratory: An easy-to-assemble LED photoreactor for aromatization of a 1, 4-dihydropyridine. *Journal of Chemical Education*, *96*(9), 2015-2020. https://doi.org/10.1021/acs.jchemed.8b01026

326) SP298

Hoffman, K. C., & Dicks, A. P. (2020). Shifting the paradigm of chemistry education by Greening the high school laboratory. *Sustainable Chemistry and Pharmacy*, *16*, 100242. https://doi.org/10.1016/j.scp.2020.100242

327) SP299

Timmer, B. J., Schaufelberger, F., Hammarberg, D., Franzén, J., Ramström, O., &Dinér, P. (2018). Simple and effective integration of Green Chemistry and Sustainability Education into an existing Organic Chemistry course. *Journal of Chemical Education*, *95*(8), 1301-1306. https://doi.org/10.1021/acs.jchemed.7b00720

328) SP300

Linkwitz, M., &Eilks, I. (2022). Simple experiments with immobilized enzymes as a contribution to green and sustainable chemistry education in the high school laboratory. *Chemistry Teacher International*, *4*(2), 121-126. doi.org/10.1515/cti-2021-0019

329) SP301

Horta, J. E. (2011). Simple microwave-assisted Claisen and Dieckmann condensation experiments for the undergraduate Organic Chemistry laboratory. *Journal of Chemical Education*, *88*(7), 1014-1015. https://doi.org/10.1021/ed1000944

330) SP302

Andraos, J., & Hent, A. (2015). Simplified application of material efficiency green metrics to synthesis plans: Pedagogical case studies selected from organic syntheses. *Journal of Chemical Education*, *92*(11), 1820-1830. https://doi.org/10.1021/acs.jchemed.5b00058

331) SP303

Lasker, G. A., Mellor, K. E., Mullins, M. L., Nesmith, S. M., & Simcox, N. J. (2017). Social and environmental justice in the chemistry classroom. *Journal of Chemical Education*, *94*(8), 983-987. https://doi.org/10.1021/acs.jchemed.6b00968

332) SP304

Marcelino, L., Sjöström, J., & Marques, C. A. (2019). Socio-problematization of Green Chemistry: Enriching systems thinking and social sustainability by education. *Sustainability*, *11*(24), 7123. https://doi.org/10.3390/su11247123

333) SP306

Ferhat, M. A., Meklati, B. Y., Visinoni, F., Vian, M. A., &Chemat, F. (2008). Solvent free microwave extraction of essential oils: Green Chemistry in the teaching laboratory*. Chimica Oggi - Chemistry Today*, *26*(2), 48-50.

334) SP307

Dicks, A. P. (2009). Solvent-free reactivity in the undergraduate organic laboratory. *Green Chemistry Letters and Reviews*, *2*(2), 87-100. https://doi.org/10.1080/17518250903164549

335) SP308

Sharma, R. K., Sharma, C., &Sidhwani, I. T. (2011). Solventless and one-pot synthesis of Cu(II) phthalocyanine complex: AGreen Chemistry experiment. *Journal of Chemical Education*, *88*(1), 86-87. https://doi.org/10.1021/ed100473u

336) SP309

Warner, M. G., Succaw, G. L., & Hutchison, J. E. (2001). Solventless syntheses of mesotetraphenylporphyrin: New experiments for a greener Organic Chemistry laboratory curriculum. *Green Chemistry*, *3*(6), 267-270. https://doi.org/10.1039/B107999A

337) SP310

Matlack, A. (2003). Some recent trends and problems in green chemistry. *Green chemistry*, *5*(1), G7-G12. https://doi.org/10.1039/B300501C

338) SP311

Lembens, A., Heinzle, G., Tepla, A., Maulide, N., Preinfalk, A., Kaiser, D., & Spitzer, P. (2022). SpottingScience–a digital learning environment to introduce Green Chemistry to secondary students and the public. *Chemistry Teacher International*, *4*(2), 143-154. doi.org/10.1515/cti-2021-0025

339) SP313

Inam, E., Ebong, G., & Offiong, N. A. (2018). Start-up case study on building Green Chemistry laboratories in University of Uyo, Nigeria. *Sustainable Chemistry and Pharmacy*, *10*, 56-59. https://doi.org/10.1016/j.scp.2018.09.003

340) SP315

Chonkaew, P., Sukhummek, B., &Faikhamta, C. (2019). STEM activities in determining stoichiometric mole ratios for secondary-school chemistry teaching. *Journal of Chemical Education*, *96*(6), 1182-1186. https://doi.org/10.1021/acs.jchemed.8b00985

341) SP316

Buenaflor, J. P., Lydon, C. K., Zimmerman, A., DeSutter, O. L., & Wissinger, J. E. (2022). Student explorations of calcium alginate bead formation by varying pH and concentration of acidic beverage juices. *Chemistry Teacher International*, *4*(2), 155-164. doi.org/10.1515/cti-2021-0027

342) SP317

Wu, N., Kubo, T., Sekoni, K. N., Hall, A. O., Phadke, S., Zurcher, D. M., Wallace, R. L., Kothari, D. B., & McNeil, A. J. (2019). Student-designed Green Chemistry experiment for a large-enrollment, introductory organic laboratory course. *Journal of Chemical Education*, *96*(11), 2420-2425. https://doi.org/10.1021/acs.jchemed.9b00375

343) SP318

Josephson, P., Nykvist, V., Qasim, W., Blomkvist, B., & Dinér, P. (2019). Student-driven development of greener chemistry in undergraduate teaching: Synthesis of lidocaine revisited. *Journal of Chemical Education*, *96*(7), 1389-1394. https://doi.org/10.1021/acs.jchemed.8b00567

344) SP319

Grieger, K., & Leontyev, A. (2021). Student-generated infographics for learning Green Chemistry and developing professional skills. *Journal of Chemical Education*, *98*(9), 2881-2891. https://doi.org/10.1021/acs.jchemed.1c00446

345) SP320

Schaber, P. M., Larkin, J. E., Pines, H. A., Berchou, K., Wierchowski, E., Marconi, A., & Suriani, A. (2012). Supercritical Fluid Extraction versus Traditional Solvent Extraction of Caffeine from Tea Leaves: A Laboratory-Based Case Study for an Organic Chemistry Course. *Journal of Chemical Education*, *89*(10), 1327-1330. https://doi.org/10.1021/ed200536e

346) SP321

Pernaa, J., Kämppi, V., & Aksela, M. (2022). Supporting the relevance of Chemistry Education through sustainable ionic liquids context: a research-based design approach. *Sustainability*, *14*(10), 6220. https://doi.org/10.3390/su14106220

347) SP324

Aurandt, J. L., & Butler, E. C. (2011). Sustainability education: Approaches for incorporating sustainability into the undergraduate curriculum. *Journal of Professional Issues in Engineering Education and Practice*, *137*(2), 102-106. https://doi.org/10.1061/(ASCE)EI.1943-5541.000004

348) SP325

Vilches, A., & Pérez, D. G. (2013). Ciencia de lasostenibilidad: Un nuevo campo de conocimientos al que la química y laeducación química estáncontribuyendo. *Educación Química*, *24*(2), 199-206. https://doi.org/10.1016/S0187-893X(13)72463-7

349) SP327

Barra, R., & González, P. (2018). Sustainable chemistry challenges from a developing country perspective: Education, plastic pollution, and beyond. *Current Opinion in Green and Sustainable Chemistry*, *9*, 40-44. https://doi.org/10.1016/j.cogsc.2017.12.001

350) SP330

Kiwfo, K., Yeerum, C., Ayutthaya, P. I. N., Kesonkan, K., Suteerapataranon, S., Panitsupakamol, P., Chinwong, D., Paengnakorn, P., Chinwong, S., Kotchabhakdi, N., Saenjum, C., Vongboot, M., &Grudpan, K. (2021). Sustainable education with local-wisdom based natural reagent for green chemical analysis with a smart device: experiences in Thailand. *Sustainability*, *13*(20), 11147. https://doi.org/10.3390/su132011147

351) SP331

Eissen, M. (2012). Sustainable production of chemicals - an educational perspective. *Chemistry Education Research and Practice*, *13*(2), 103-111. https://doi.org/10.1039/C2RP90002E

352) SP332

Hwang, H. L., Jadhav, S. R., Silverman, J. R., & John, G. (2014). Sweet and sustainable: Teaching the biorefinery concept through biobased gelatorsynthesis. *Journal of Chemical Education*, *91*(10), 1563-1568. https://doi.org/10.1021/ed3007764

353) SP334

Solomon, S. D., Rutkowsky, S. A., Mahon, M. L., & Halpern, E. M. (2011). Synthesis of copper pigments, malachite and verdigris: Making tempera paint. *Journal of Chemical Education*, *88*(12), 1694-1697. https://doi.org/10.1021/ed200096e

354) SP336

Bisol, T. B., Marques, M. V., Rossa, T. A., Nascimento, M. G., & Sá, M. M. (2012). Síntese da Epoxone a partir de D-frutose: um experimento didático em laboratório de Química Orgânica com foco nos princípios da Química Verde. *Química Nova*, *35*(6), 1260-1263. https://doi.org/10.1590/S0100-40422012000600035

355) SP337

Leslie, R., Leeb, E., & Smith, R. B. (2012). Synthesis of ethyl nalidixate: a medicinal chemistry experiment. *Journal of Chemical Education*, *89*(1), 144-146. https://doi.org/10.1021/ed200148h

356) SP339

Sharma, R. K., Yadav, S., Gupta, R., & Arora, G. (2019). Synthesis of magnetic nanoparticles using potato extract for dye degradation: A Green Chemistry experiment. *Journal of Chemical Education*,*96*(12), 3038-3044. https://doi.org/10.1021/acs.jchemed.9b00384

357) SP340

Ison, E. A., & Ison, A. (2012). Synthesis of well-defined copper N-heterocyclic carbene complexes and their use as catalysts for a “click reaction”: A multistep experiment that emphasizes the role of catalysis in Green Chemistry. *Journal of Chemical Education*, *89*(12), 1575-1577. https://doi.org/10.1021/ed300243s

358) SP341

Hutchison, J. E. (2019). Systems thinking and Green Chemistry: Powerful levers for curricular change and adoption. *Journal of Chemical Education*, *96*(12), 2777-2783. https://doi.org/10.1021/acs.jchemed.9b00334

359) SP342

Hurst, G. A. (2020). Systems thinking approaches for international Green Chemistry education. *Current Opinion in Green and Sustainable Chemistry*, *21*, 93-97. https://doi.org/10.1016/j.cogsc.2020.02.004

360) SP343

Blatti, J. L., Garcia, J., Cave, D., Monge, F., Cuccinello, A., Portillo, J., Juarez, B., Chan, E., & Schwebel, F. (2019). Systems thinking in cience education and outreach toward a sustainable future. *Journal of Chemical Education*, *96*(12), 2852-2862. https://doi.org/10.1021/acs.jchemed.9b00318

361) SP344

Perosa, A., Gonella, F., & Spagnolo, S. (2019). Systems thinking: Adopting an emergy perspective as a tool for teaching Green Chemistry. *Journal of Chemical Education*, *96*(12), 2784-2793. https://doi.org/10.1021/acs.jchemed.9b00377

362) SP354

Marques, C. A., Gonçalves, F. P., Zampiron, E., Coelho, J. C., Mello, L. C., Oliveira, P. R. S., &Lindemann, R. H. (2007). Visões de meio ambiente e suas implicações pedagógicas no Ensino de Química na escola média. *Química Nova*, *30*(8), 2043-2052. https://doi.org/10.1590/S0100-40422007000800042

363) SP346

Marteel-Parrish, A. E. (2014). Teaching Green and Sustainable Chemistry: A revised one-semester course based on inspirations and challenges. *Journal of Chemical Education*, *91*(7), 1084-1086. https://doi.org/10.1021/ed400393b

364) SP348

Barcena, H., Tuachi, A., & Zhang, Y. (2017). Teaching Green Chemistry with epoxidized soybean oil. *Journal of Chemical Education*, *94*(9), 1314-1318. https://doi.org/10.1021/acs.jchemed.6b00672

365) SP349

Cacciatore, K. L., &Sevian, H. (2006). Teaching lab report writing through inquiry: A Green Chemistry stoichiometry experiment for General Chemistry. *Journal of Chemical Education*, *83*(7), 1039-1041. https://doi.org/10.1021/ed083p1039

366) SP350

Dicks, A. P. (2018). Teaching reaction efficiency through the lens of Green Chemistry: Should students focus on the yield, or the process?.*Current Opinion in Green and Sustainable Chemistry*, *13*, 27-31. https://doi.org/10.1016/j.cogsc.2018.03.009

367) SP351

Armstrong, L. B., Rivas, M. C., Douskey, M. C., &Baranger, A. M. (2018). Teaching students the complexity of green chemistry and assessing growth in attitudes and understanding. *Current Opinion in Green and Sustainable Chemistry*, *13*, 61-67. https://doi.org/10.1016/j.cogsc.2018.04.003

368) SP352

Keppeler, N., Novaki, L. P., & El Seoud, O. A. (2021). Teaching the undergraduate laboratory during pandemic time: Using the synthesis of a biodiesel model to demonstrate aspects of Green Chemistry. *Journal of Chemical Education*, *98*(12), 3962-3967. https://doi.org/10.1021/acs.jchemed.1c00779

369) SP353

Sues, P. E., Cai, K., McIntosh, D. F., & Morris, R. H. (2015). Template effect and ligand substitution methods for the synthesis of iron catalysts: A two-part experiment for Inorganic Chemistry. *Journal of Chemical Education*, *92*(2), 378-381. https://doi.org/10.1021/ed500341p

370) SP355

Breuzard, J., Abouchi, N., Almendra, E., Mohamed-Arab, C., De Bellefon, C., Legrand, C., Nikitine, C., Privat, G., Tognan, M. A., Fleuriot, H., Rivet, A., Traoré, M., Quadrelli, E. A., &Pignault, G. (2018). La chaire de développement durable à CPE Lyon: Un hybride dans la complexité. *L'ActualitéChimique*, (427-428), 110-116.

371) SP356

Heaton, A., Hodgson, S., Overton, T., & Powell, R. (2006). The challenge to develop CFC (chlorofluorocarbon) replacements: Aproblem based learning case study in Green Chemistry. *Chemistry Education Research and Practice*, *7*(4), 280-287. https://doi.org/10.1039/B6RP90014C

372) SP357

Grigoryeva, M., Dmitrevskaya, I., Belopukhov, S., & Osipova, A. (2022). The chemical training of agrarian specialists: From the chemicalization of agriculture to green technologies. *Sustainability*, *14*(13), 8062. https://doi.org/10.3390/su14138062

373) SP358

Kohn, C. (2018). The development of a bioenergy-based green chemistry curriculum for high schools. *Physical Sciences Reviews*, *4*(1). doi.org/10.1515/psr-2018-0080

374) SP359

Sudarmin, S., Zahro, L., Pujiastuti, R. S. E., Asyhar, R., Zaenuri, Z., & Rosita, A. (2019). The development of PBL-based worksheets integrated with Green Chemistry and ethnoscience to improve students' thinking skills. *Jurnal Pendidikan IPA Indonesia*, *8*(4), 492-499.

375) SP360

Mostashri, S. M. (2003). The educational and research viewpoints of the GreenChemistry. *International Journal of Chemical Sciences*, *1*(4), 447-448.

376) SP361

Karpudewan, M., Roth, W. M., & Ismail, Z. (2015). The effects of "Green Chemistry" on secondary school students' understanding and motivation. *The Asia-Pacific Education Researcher*, *24*(1), 35-43. https://doi.org/10.1007/s40299-013-0156-z

377) SP362

Karpudewan, M., Ismail, Z., & Roth, W. M. (2012). The efficacy of a Green Chemistry laboratory-based pedagogy: Changes in environmental values of Malaysia pre-service teachers. *International Journal of Science and Mathematics Education*, *10*, 497-529. https://doi.org/10.1007/s10763-011-9295-y

378) SP363

Moreno, R. A. F., &Carlosama, L. Y. O. (2020). El enfoque de Química Verde enlainvestigaciónendidáctica de lascienciasexperimentales. Suabordajeen revistas iberoamericanas: 2002-2018. *Educación Química*, *31*(1), 84-104. https://doi.org/10.22201/fq.18708404e.2020.1.70414

379) SP365

Chiu, W. K., Fong, B. Y. F., & Ho, W. Y. (2022). The importance of environmental sustainability for healthy ageing and the incorporation of systems thinking in education for a sustainable environment. *Asia Pacific Journal of Health Management*, *17*(1). https://doi.org/10.24083/apjhm.v17i1.1589

380) SP366

Karpudewan, M., Ismail, Z. H., & Mohamed, N. (2009). The integration of Green Chemistry experiments with sustainable development concepts in pre-service teachers' curriculum: Experiences from Malaysia. *International Journal of Sustainability in Higher Education*, *10*(2), 118-135. https://doi.org/10.1108/14676370910945936

381) SP367

Listyarini, R. V., Pamenang, F. D. N., Harta, J., Wijayanti, L. W., Asy'ari, M., & Lee, W. (2019). The integration of Green Chemistry principles into small scale chemistry practicum for senior high school students. *Jurnal Pendidikan IPA Indonesia*,*8*(3), 371-378.

382) SP373

Koroluk, K. J., Jackson, D. A., & Dicks, A. P. (2012). The Petasis reaction: Microscale synthesis of a tertiary amine antifungal analog. *Journal of Chemical Education*, *89*(6), 796-798. https://doi.org/10.1021/ed200426m

383) SP374

Bodner, G. M. (2017). The quadruple bottom line: The advantages of incorporating Green Chemistry into the undergraduate chemistry major. *Physical Sciences Reviews*, *2*(9). doi.org/10.1515/psr-2017-0003

384) SP375

Vilches, A., & Pérez, D. G. (2011). Papel de la Química y suenseñanzaenlaconstrucción de un futuro sostenible. *EducaciónQuímica*, *22*(2), 103-116. https://doi.org/10.1016/S0187-893X(18)30122-8

385) SP376

Karpudewan, M., Roth, W. M., &Sinniah, D. (2016). The role of Green Chemistry activities in fostering secondary school students' understanding of acid–base concepts and argumentation skills. *Chemistry Education Research and Practice*, *17*(4), 893-901. https://doi.org/10.1039/C6RP00079G

386) SP377

Mellor, K. E., Coish, P., Brooks, B. W., Gallagher, E. P., Mills, M., Kavanagh, T. J., Simcox, N., Lasker, G. A., Botta, D., Voutchkova-Kostal, A., Kostal, J., Mullins, M. L., Nesmith, S. M., Corrales, J., Kristofco, L., Saari, G., Steele, W. B., Melnikov, F., Zimmerman, J. B., & Anastas, P. T. (2018). The safer chemical design game. Gamification of Green Chemistry and safer chemical design concepts for high school and undergraduate students. *Green Chemistry Letters and Reviews*, *11*(2), 103-110. https://doi.org/10.1080/17518253.2018.1434566

387) SP378

Cannon, A. S., & Warner, J. C. (2011). The science of green chemistry and its role in chemicals policy and educational reform. *New Solutions: A Journal of Environmental and Occupational Health Policy*, *21*(3), 499-517. https://doi.org/10.2190/NS.21.3.

388) SP379

Lu, G. P., Chen, F., & Cai, C. (2017). Thiourea in the construction of C–S bonds as part of an undergraduate organic chemistry laboratory course. *Journal of Chemical Education*, *94*(2), 244-247. https://doi.org/10.1021/acs.jchemed.6b00232

389) SP380

Corcoran, E. R., Lydon, C., Enright, M. C., Buenaflor, J. P., Anderson, K., & Wissinger, J. E. (2022). Thirst for a solution: Alginate biopolymer experiments for the middle and high school classroom. *Journal of Chemical Education*, *99*(2), 1021-1025. https://doi.org/10.1021/acs.jchemed.1c00905

390) SP381

Cooper, P. D., & Walser, J. (2019). Total chemical footprint of an experiment: a systems thinking approach to teaching rovibrational spectroscopy. *Journal of Chemical Education*, *96*(12), 2947-2951. https://doi.org/10.1021/acs.jchemed.9b00405

391) SP382

MacKellar, J. J., Constable, D. J. C., Kirchhoff, M. M., Hutchison, J. E., & Beckman, E. (2020). Toward a green and sustainable chemistry education road map.

Journal of Chemical Education, *97*(8), 2104-2113. https://doi.org/10.1021/acs.jchemed.0c00288

392) SP384

Alvaro, C. E. S., Abad, A. M., & Nudelman, N. S. (2019). Towards a holistic approach to sustainability in the Argentine Patagonia: Research results and educational proposal. *International Journal of Sustainability in Higher Education*, *20*(5), 951-963. https://doi.org/10.1108/IJSHE-07-2019-0226

393) SP388

Orwat, K., Bernard, P., Wróblewski, S., & Mendez, J. D. (2018). Traditional vs. UV-Cured coatings–an inquiry-based experiment for introducing Green Chemistry. *Macedonian Journal of Chemistry and Chemical Engineering*, *37*(2), 215-224. https://doi.org/10.20450/mjcce.2018.1512

394) SP389

Tan, D., Fan, W., Wu, S. W., Zhang, D., & Mo, Y. (2022). Transesterification of Isoamyl Acetate─ An experiment in Green Organic Chemistry. *Journal of Chemical Education*, *99*(8), 3020-3023. https://doi.org/10.1021/acs.jchemed.1c01027

395) SP390

Krenz, J., Simcox, N., Stoddard Tepe, J. S., & Simpson, C. D. (2016). Transitioning to safer chemicals in academic research laboratories: Lessons learned at the University of Washington. *ACS Sustainable Chemistry & Engineering*, *4*(7), 4021-4028. https://doi.org/10.1021/acssuschemeng.6b00926

396) SP391

England, A., Morrison, L., Wood-Moore, M., Kennedy, A., Velasco, J. D., White, J., Meredith, N. A., & Mauldin, R. F. (2022). Treatment of waste from the molybdenum blue analysis of phosphate: a laboratory experiment in green chemistry. *Journal of Chemical Education*, *99*(7), 2643-2648. https://doi.org/10.1021/acs.jchemed.1c01248

397) SP392

Günter, T., Akkuzu, N., &Alpat, Ş. (2017). Understanding ‘Green Chemistry’and ‘sustainability’: an example of problem-based learning (PBL). *Research in Science & Technological Education*, *35*(4), 500-520. https://doi.org/10.1080/02635143.2017.1353964

398) SP394

Lee, N. E., Gurney, R., &Soltzberg, L. (2014). Using Green Chemistry principles as a framework to incorporate research into the organic laboratory curriculum. *Journal of Chemical Education*, *91*(7), 1001-1008. https://doi.org/10.1021/ed300283y

399) SP396

Gupta, A., & Mishra, V. (2020). Using recycled bacterial culture media to demonstrate anti-counterfeiting measures and ninhydrin tests with "turn off fluorescence" to high school students. *Journal of Chemical Education*, *97*(12), 4425-4429. https://doi.org/10.1021/acs.jchemed.0c00344

400) SP399

Hudson, R., Bishop, A., Glaisher, S., & Katz, J. L. (2015). Visualizing nanocatalysts in action from color change reaction to magnetic recycling and reuse. *Journal of Chemical Education*, *92*(11), 1892-1895. https://doi.org/10.1021/acs.jchemed.5b00106

401) SP400

Chen, M., Jeronen, E., & Wang, A. (2020). What lies behind teaching and learning Green Chemistry to promote sustainability education? A literature review. *International Journal of Environmental Research and Public Health*, *17*(21), 7876. https://doi.org/10.3390/ijerph17217876