**CFCs**

1. 1

2. 2

3. 3

4. 4

5. 5

6. 6

7. 7

8. 8

9. 9

10. 10

11. 11

12. 12

13. 13

14. 14

15. 15

16. 16

**Ethane**

1. 17

2. 18

3.19

4. 20

5. 21

6. 22

7. 23

8. 24

9. 25

10. 26

11. 27

12. 28

13. 29

14. 30

15. 31

16. 32

17. 33

18. 34

19. 35

20. 36

21. 37

**Ethylene**

1. 38

2. 39

3. 40

4. 41

5. 42

6. 43

7. 44

8. 19

9. 45

10. 36

11. 46

12. 47

**H2S**

1. 48

2. 49

**SF6**

1. 50

2.51

3.52

**CO2**

1. 53

2. 54

3. 55

4. 56

5. 57

6. 58

7. 59

8. 60

9. 61

10. 62

11. 63

12. 64

13. 65

14. 66

15. 67

16. 68

17. 69

18. 70

19. 71

20.72

21. 73

22. 74

23. 75

24. 76

25. 77

26. 78

27. 79

28. 80

29. 81

30. 82

31. 83

32. 84

33. 85

34. 86

35. 87

36. 88

37. 89

38. 90

39. 91

40. 79, 92

41. 93

42. 94

43. 95

44. 96

45. 97

46. 98

47. 99

48. 100

49. 101

50. 102

51. 103

52. 104

53. 105

54. 106

55. 107

56. 108

57. 109

58. 110

59. 111

60. 112

61. 113

62. 114

63. 115

64. 116

65. 117

66. 118

67. 119

68. 120

69. 121

70. 122

71. 123

72. 124

73. 125

74. 126

75. 127

76. 128

77. 129

78. 130

79. 131

80. 132

81. 133

82. 134

83. 135

84. 136

85. 137

86. 138

87. 139

88. 140

89. 141

90. 142

91. 143

92. 144

93. 145

94. 146

95. 147

96. 148

97. 149

98. 150

99. 151

100. 152

101. 153

102. 154

103. 155

104. 156

105. 157

106. 158

107. 159

108. 160

109. 161

110. 162

111. 163

112. 164

113. 165

114. 166

115.167

116. 168

117. 169

118. 170

119. 171

120. 172

121. 173

122. 174

123.175

124.176

125. 177

126. 178

127. 179

128. 180

129. 181

130. 182

131. 183

132. 184

133. 185

134. 186

135. 187

136. 188

137. 189

138. 190

139. 191

140. 192

141. 193

142. 194

143. 195

144. 196

145. 197

146. 198

147. 199

148. 200

149. 201

150. 202

151. 203

152. 204

153. 205

154. 206

155. 207

156. 208

157. 209

158. 210

159. 211

160. 212

161. 213

162. 214

163. 215

164. 216

165. 217

166. 218

167. 219

168. 220

169. 221

170. 222

171. 223

172. 224

173. 225

174. 226

175. 227

176. 228

177. 229

178. 230

179. 231

180. 232

181. 233

182. 234

183. 235

184. 236

185. 237

186. 238

187. 239

188. 240

189. 241

**Methane**

1. 242

2. 243

3. 244

4. 245

5. 246

6. 247

7. 248

8. 249

9. 250

10. 251

11. 252

12. 253

13. 254

14. 255

15. 256

16. 257

17. 258

18. 259

19. 260

20. 261

21. 262

22. 263

23. 264

24. 265

25. 266

26. 267

27. 268

28. 269

29. 270

30. 271

31. 272

32. 273

33. 274

34. 275

35. 276

36. 277

37. 278

38. 279

39. 280

40. 281

41. 282

42. 283

43. 284

44. 285

45. 286

46. 287

47. 288

48. 289

49. 290

50. 291

51. 292

52. 293

53. 294

54. 295

55. 296

56. 297

57. 298

58. 299

59. 300

60. 301

61. 302

62. 303

63. 304

64. 305

65. 306

66. 307

67. 308

68. 309

69. 310

70. 311

71. 312

72. 313

73. 314

74. 315

75. 316

76. 317

77. 318

78. 319

79. 320

80. 321

81. 322

82. 323

83. 324

84. 325

85. 326

86. 327

87. 328

88. 329

89. 80

90. 330

91. 331

92. 332

93. 333

94. 334

95. 335

96. 336

97. 337

98. 338

99. 339

100. 340

101. 341

102. 342

103. 343

104. 344

105. 345

106. 346

107. 347

108. 348

**Hydrogen**

1. 349

2. 350

3. 351

4. 352

5. 353

6. 354

7. 355

8. 356

9. 357

10. 358

11. 359

12. 360

13. 361

14. 362

15. 363

16. 364

17. 365

18. 366

19. 367

20. 368

21. 369

22. 370

23. 371

24. 372

25. 373

26. 374

27. 375

28. 376

29. 377

30. 378

31. 379

32. 380

33. 381

34. 382

35. 383

36. 384

37. 385

38. 386

39. 387

40. 388

41. 389

42. 390

43. 391

44. 392

45. 393

46. 394

47. 113

48. 395

49. 396

50. 397

51. 398

52. 399

53. 400

54. 401

55. 402

56. 403

57. 404

58. 405

59. 406

60. 407

61. 408

62. 409

63. 410

64. 411

65. 412

66. 413

67. 414

68. 415

69. 416

70. 417

71. 418

72. 419

73. 420

74. 421

75. 422

76. 423

77. 424

78. 425

79. 426

80. 427

81. 428

82. 429

83. 430

84. 431

85. 432

86. 433

87. 434

88. 435

89. 436

90. 437

91. 438

92. 439

93. 440

94. 441

95. 442

96. 443

97. 444

98. 445

99. 446

100. 447

101. 448

102. 449

103. 450

104. 451

105. 452

106. 453

107. 454

108. 455

109. 456

110. 457

111. 458

112. 459

113. 460

**References**

1. Adsorption Characteristics of Methane, HFC-134a and R507A on Highly Porous Activated Carbon.

2. Adsorption characteristics of activated carbon /HFC152a pair for solar adsorption cooling systems.

3. Comparison Study on the Adsorption of CFC-115 and HFC-125 on Activated Carbon and Silicalite-1.

4. Adsorption Equilibria of CFC-115 on Activated Charcoal.

5. Adsorption Equilibria of Hexafluoropropene and 1,1,1,2,3,3,3-Heptafluoropropane on Activated Carbon at 283, 303, 333, and 363 K.

6. Adsorption characteristics evaluation of R134A and R404A on different adsorbents.

7. Attalla, M.; Sadek, S., Experimental Investigation of Granular Activated Carbon/R-134a Pair for Adsorption Cooling System Applications. *Journal of Power and Energy Engineering* **2014,** *02*, (02), 11-20.

8. Shiflett, M. B.; Corbin, D. R.; Elliott, B. A.; Subramoney, S.; Kaneko, K.; Yokozeki, A., Sorption of trifluoromethane in activated carbon. *Adsorption* **2014,** *20*, (4), 565-575.

9. Shin, J.; Suh, S.-S.; Choi, M. K., Enthalpy Changes of Adsorption of Tetrafluorocarbon (CF4) and Hexafluoroethane (C2F6) on Activated Carbon. *Clean Technology* **2014,** *20*, (1), 22-27.

10. Choi, S. W.; Yoon, H. J.; Lee, H. J.; Lee, E.-S.; Lim, D.-S.; Lee, K. B., CF4 adsorption on porous carbon derived from silicon carbide. *Micropor. Mesopor. Mater.* **2020,** *306*.

11. Sosa, J. E.; Malheiro, C.; Ribeiro, R. P. P. L.; Castro, P. J.; Piñeiro, M. M.; Araújo, J. M. M.; Plantier, F.; Mota, J. P. B.; Pereiro, A. B., Adsorption of fluorinated greenhouse gases on activated carbons: evaluation of their potential for gas separation. *Journal of Chemical Technology & Biotechnology* **2020,** *95*, (7), 1892-1905.

12. Seo, S.; Mikšík, F.; Maeshiro, Y.; Thu, K.; Miyazaki, T., Performance Evaluation of an Adsorption Heat Pump System Using MSC-30/R1234yf Pair with the Impact of Thermal Masses. *Applied Sciences* **2021,** *11*, (5).

13. Yagnamurthy, S.; Rakshit, D.; Jain, S.; Rocky, K. A.; Islam, M. A.; Saha, B. B., Adsorption of difluoromethane onto activated carbon based composites: Thermophysical properties and adsorption characterization. *Int. J. Heat Mass Transfer* **2021,** *171*.

14. Sultan, M.; Miyazaki, T.; Saha, B. B.; Koyama, S.; Kil, H.-S.; Nakabayashi, K.; Miyawaki, J.; Yoon, S.-H., Adsorption of Difluoromethane (HFC-32) onto phenol resin based adsorbent: Theory and experiments. *Int. J. Heat Mass Transfer* **2018,** *127*, 348-356.

15. Adsorption Isotherms of Tetrafluoromethane and Hexafluoroethane on Various Adsorbents.

16. Askalany, A. A.; Saha, B. B.; Uddin, K.; Miyzaki, T.; Koyama, S.; Srinivasan, K.; Ismail, I. M., Adsorption Isotherms and Heat of Adsorption of Difluoromethane on Activated Carbons. *J. Chem. Eng. Data* **2013,** *58*, (10), 2828-2834.

17. Saha, B. B.; Chakraborty, A.; Koyama, S.; Yoon, S.-H.; Mochida, I.; Kumja, M.; Yap, C.; Ng, K. C., Isotherms and thermodynamics for the adsorption of n -butane on pitch based activated carbon. *Int. J. Heat Mass Transfer* **2008,** *51*, (7-8), 1582-1589.

18. Yuan, B.; Wu, X.; Chen, Y.; Huang, J.; Luo, H.; Deng, S., Adsorptive separation studies of ethane-methane and methane-nitrogen systems using mesoporous carbon. *J. Colloid Interface Sci.* **2013,** *394*, 445-50.

19. Adsorption Equilibria of Methane, Ethane, Ethylene, Nitrogen, and Hydrogen onto Activated Carbon.

20. Liang, W.; Zhang, Y.; Wang, X.; Wu, Y.; Zhou, X.; Xiao, J.; Li, Y.; Wang, H.; Li, Z., Asphalt-derived high surface area activated porous carbons for the effective adsorption separation of ethane and ethylene. *Chem. Eng. Sci.* **2017,** *162*, 192-202.

21. Ho, B. N.; Perez, D. P.; Mancilla, D. P.; Diaz, J.; Hort, C.; Bessieres, D.; Ghimbeu, C. M., Determination of methane, ethane and propane on activated carbons by experimental pressure swing adsorption method. *Journal of Natural Gas Science and Engineering* **2021**.

22. Chen, J.; Loo, L. S.; Wang, K., An Ideal Absorbed Solution Theory (IAST) Study of Adsorption Equilibria of Binary Mixtures of Methane and Ethane on a Templated Carbon. *J. Chem. Eng. Data* **2011,** *56*, (4), 1209-1212.

23. Wang, X.; Wu, Y.; Zhou, X.; Xiao, J.; Xia, Q.; Wang, H.; Li, Z., Novel C-PDA adsorbents with high uptake and preferential adsorption of ethane over ethylene. *Chem. Eng. Sci.* **2016,** *155*, 338-347.

24. Jiang, W.-J.; Sun, L.-B.; Yin, Y.; Song, X.-L.; Liu, X.-Q., Ordered Mesoporous Carbon CMK-3 Modified with Cu(I) for Selective Ethylene/Ethane Adsorption. *Sep. Sci. Technol.* **2013,** *48*, (6), 968-976.

25. Adsorption and Desorption Equilibria of Nitrogen, Methane, Ethane, and Ethylene on Date-Pit Activated Carbon.

26. Giraldo, L.; Moreno-Piraján, J. C., Novel Activated Carbon Monoliths for Methane Adsorption Obtained from Coffee Husks. *Materials Sciences and Applications* **2011,** *02*, (05), 331-339.

27. Adsorption Equilibria of Nitrogen, Methane, and Ethane on BDH-Activated Carbon.

28. Fu, N.; Yu, J.; Zhao, J.; Liu, R.; Li, F.; Du, Y.; Yang, Z., In-situ preparation of nitrogen-doped unimodal ultramicropore carbon nanosheets with ultrahigh gas selectivity. *Carbon* **2019,** *149*, 538-545.

29. Mallek, R.; Plantier, F.; Dicharry, C.; Jacob, M.; Miqueu, C., Experimental characterization of cyclopentane adsorption/desorption in microporous activated carbons. *Carbon Trends* **2021,** *2*.

30. Ma, X.; Fang, M.; Liu, B.; Chen, R.; Shi, R.; Wu, Q.; Zeng, Z.; Li, L., Urea-assisted synthesis of biomass-based hierarchical porous carbons for the light hydrocarbons adsorption and separation. *Chem. Eng. J.* **2022,** *428*.

31. Ben Torkia, Y.; Ben Yahia, M.; Khalfaoui, M.; Al-Muhtaseb, S. A.; Ben Lamine, A., Energetic investigation of the adsorption process of CH4, C2H6 and N2 on activated carbon: Numerical and statistical physics treatment. *Physica B: Condensed Matter* **2014,** *433*, 55-61.

32. Saha, D.; Toof, B.; Krishna, R.; Orkoulas, G.; Gismondi, P.; Thorpe, R.; Comroe, M. L., Separation of ethane-ethylene and propane-propylene by Ag(I) doped and sulfurized microporous carbon. *Micropor. Mesopor. Mater.* **2020,** *299*.

33. Bläker, C.; Pasel, C.; Luckas, M.; Dreisbach, F.; Bathen, D., Investigation of load-dependent heat of adsorption of alkanes and alkenes on zeolites and activated carbon. *Micropor. Mesopor. Mater.* **2017,** *241*, 1-10.

34. Zhang, P.; Wen, X.; Wang, L.; Zhong, Y.; Su, Y.; Zhang, Y.; Wang, J.; Yang, J.; Zeng, Z.; Deng, S., Algae-derived N-doped porous carbons with ultrahigh specific surface area for highly selective separation of light hydrocarbons. *Chem. Eng. J.* **2020,** *381*.

35. Lee, S. K.; Park, H.; Yoon, J. W.; Kim, K.; Cho, S. J.; Maurin, G.; Ryoo, R.; Chang, J. S., Microporous 3D Graphene-like Zeolite-Templated Carbons for Preferential Adsorption of Ethane. *ACS Appl Mater Interfaces* **2020,** *12*, (25), 28484-28495.

36. Wang, Z.; Yang, L.; Zhang, P.; Cui, J.; Chen, P.; Ding, Q.; Cui, X.; Xing, H., Highly Microporous Activated Carbons with Industrial Potential for Selective Adsorption of Ethane over Ethylene. *Industrial & Engineering Chemistry Research* **2021**.

37. Murialdo, M.; Stadie, N. P.; Ahn, C. C.; Fultz, B., Observation and Investigation of Increasing Isosteric Heat of Adsorption of Ethane on Zeolite-Templated Carbon. *The Journal of Physical Chemistry C* **2015,** *119*, (2), 944-950.

38. Liang, W.; Wu, Y.; Xiao, H.; Xiao, J.; Li, Y.; Li, Z., Ethane-selective carbon composites CPDA@A-ACs with high uptake and its enhanced ethane/ethylene adsorption selectivity. *AlChE J.* **2018,** *64*, (9), 3390-3399.

39. Ma, C.; Wang, X.; Wang, X.; Yuan, B.; Wu, Y.; Li, Z., Novel glucose-based adsorbents (Glc-As) with preferential adsorption of ethane over ethylene and high capacity. *Chem. Eng. Sci.* **2017,** *172*, 612-621.

40. Gao, F.; Wang, Y.; Wang, X.; Wang, S., Ethylene/ethane separation by CuCl/AC adsorbent prepared using CuCl2 as a precursor. *Adsorption* **2016,** *22*, (7), 1013-1022.

41. Wang, X.; Wu, Y.; Peng, J.; Wu, Y.; Xiao, J.; Xia, Q.; Li, Z., Novel glucosamine-based carbon adsorbents with high capacity and its enhanced mechanism of preferential adsorption of C2H6 over C2H4. *Chem. Eng. J.* **2019,** *358*, 1114-1125.

42. Liang, W.; Xiao, H.; Lv, D.; Xiao, J.; Li, Z., Novel asphalt-based carbon adsorbents with super-high adsorption capacity and excellent selectivity for separation for light hydrocarbons. *Sep. Purif. Technol.* **2018,** *190*, 60-67.

43. Wang, S.-H.; Hwang, Y.-K.; Choi, S. W.; Yuan, X.; Lee, K. B.; Chang, F.-C., Developing self-activated lignosulfonate-based porous carbon material for ethylene adsorption. *Journal of the Taiwan Institute of Chemical Engineers* **2020,** *115*, 315-320.

44. Wang, J.; Krishna, R.; Yang, T.; Deng, S., Nitrogen-rich microporous carbons for highly selective separation of light hydrocarbons. *Journal of Materials Chemistry A* **2016,** *4*, (36), 13957-13966.

45. Su, W.; Zhang, A.; Sun, Y.; Ran, M.; Wang, X., Adsorption Properties of C2H4 and C3H6 on 11 Adsorbents. *J. Chem. Eng. Data* **2016,** *62*, (1), 417-421.

46. Ma’mun, S.; Mukti, N. I. F.; Prasetyo, I.; Mindaryani, A.; Septarini, S.; Tamura, H.; Purnomo, M. R. A., Preparation of porous carbon as ethylene adsorbent by pyrolysis of extraction waste Mangosteen rinds. *MATEC Web of Conferences* **2018,** *154*.

47. Prasetyo, I.; Mukti, N. I. F.; Ariyanto, T., Ethylene Adsorption Using Cobalt Oxide-Loaded Polymer-Derived Nanoporous Carbon and Its Application to Extend Shelf Life of Fruit. *Molecules* **2019,** *24*, (8).

48. Kan, X.; Chen, X.; Chen, W.; Mi, J.; Zhang, J.-Y.; Liu, F.; Zheng, A.; Huang, K.; Shen, L.; Au, C.; Jiang, L., Nitrogen-Decorated, Ordered Mesoporous Carbon Spheres as High-Efficient Catalysts for Selective Capture and Oxidation of H2S. *ACS Sustainable Chemistry & Engineering* **2019,** *7*, (8), 7609-7618.

49. Zhang, J. p.; Sun, Y.; Woo, M. W.; Zhang, L.; Xu, K. Z., Preparation of steam activated carbon from black liquor by flue gas precipitation and its performance in hydrogen sulfide removal: Experimental and simulation works. *Journal of the Taiwan Institute of Chemical Engineers* **2016,** *59*, 395-404.

50. Yang, Y.; Goh, K.; Chuah, C. Y.; Karahan, H. E.; Birer, Ö.; Bae, T.-H., Sub-Ångström-level engineering of ultramicroporous carbons for enhanced sulfur hexafluoride capture. *Carbon* **2019,** *155*, 56-64.

51. Sun, R.; Tai, C.-W.; Strømme, M.; Cheung, O., Hierarchical Porous Carbon Synthesized from Novel Porous Amorphous Calcium or Magnesium Citrate with Enhanced SF6 Uptake and SF6/N2 Selectivity. *ACS Applied Nano Materials* **2019,** *2*, (2), 778-789.

52. Chen, S.; Shen, Y.; Guan, Z.; Liu, B.; Tang, Z.; Zhang, D.; Fu, B., Adsorption Properties of SF6 on Zeolite NaY, 13X, Activated Carbon, and Silica Gel. *J. Chem. Eng. Data* **2020,** *65*, (8), 4044-4051.

53. Bai, R.; Yang, M.; Hu, G.; Xu, L.; Hu, X.; Li, Z.; Wang, S.; Dai, W.; Fan, M., A new nanoporous nitrogen-doped highly-efficient carbonaceous CO2 sorbent synthesized with inexpensive urea and petroleum coke. *Carbon* **2015,** *81*, 465-473.

54. Yue, L.; Xia, Q.; Wang, L.; Wang, L.; DaCosta, H.; Yang, J.; Hu, X., CO2 adsorption at nitrogen-doped carbons prepared by K2CO3 activation of urea-modified coconut shell. *J. Colloid Interface Sci.* **2018,** *511*, 259-267.

55. Wang, J.; Heerwig, A.; Lohe, M. R.; Oschatz, M.; Borchardt, L.; Kaskel, S., Fungi-based porous carbons for CO2 adsorption and separation. *Journal of Materials Chemistry* **2012,** *22*, (28).

56. Puthiaraj, P.; Lee, Y.-R.; Ahn, W.-S., Microporous amine-functionalized aromatic polymers and their carbonized products for CO2 adsorption. *Chem. Eng. J.* **2017,** *319*, 65-74.

57. Khalili, S.; Khoshandam, B.; Jahanshahi, M., A comparative study of CO2 and CH4 adsorption using activated carbon prepared from pine cone by phosphoric acid activation. *Korean Journal of Chemical Engineering* **2016,** *33*, (10), 2943-2952.

58. Plaza, M. G.; González, A. S.; Pis, J. J.; Rubiera, F.; Pevida, C., Production of microporous biochars by single-step oxidation: Effect of activation conditions on CO2 capture. *Applied Energy* **2014,** *114*, 551-562.

59. Casco, M. E.; Martínez-Escandell, M.; Silvestre-Albero, J.; Rodríguez-Reinoso, F., Effect of the porous structure in carbon materials for CO2 capture at atmospheric and high-pressure. *Carbon* **2014,** *67*, 230-235.

60. Zhang, Z.; Zhou, J.; Xing, W.; Xue, Q.; Yan, Z.; Zhuo, S.; Qiao, S. Z., Critical role of small micropores in high CO2 uptake. *Phys Chem Chem Phys* **2013,** *15*, (7), 2523-9.

61. Yu, J.; Guo, M.; Muhammad, F.; Wang, A.; Zhang, F.; Li, Q.; Zhu, G., One-pot synthesis of highly ordered nitrogen-containing mesoporous carbon with resorcinol–urea–formaldehyde resin for CO2 capture. *Carbon* **2014,** *69*, 502-514.

62. Chandra, V.; Yu, S. U.; Kim, S. H.; Yoon, Y. S.; Kim, D. Y.; Kwon, A. H.; Meyyappan, M.; Kim, K. S., Highly selective CO2 capture on N-doped carbon produced by chemical activation of polypyrrole functionalized graphene sheets. *Chem Commun (Camb)* **2012,** *48*, (5), 735-7.

63. Liu, L.; Deng, Q.-F.; Ma, T.-Y.; Lin, X.-Z.; Hou, X.-X.; Liu, Y.-P.; Yuan, Z.-Y., Ordered mesoporous carbons: citric acid-catalyzed synthesis, nitrogen doping and CO2 capture. *Journal of Materials Chemistry* **2011,** *21*, (40).

64. Hao, G. P.; Li, W. C.; Qian, D.; Lu, A. H., Rapid synthesis of nitrogen-doped porous carbon monolith for CO2 capture. *Adv. Mater.* **2010,** *22*, (7), 853-7.

65. Wang, J.; Senkovska, I.; Oschatz, M.; Lohe, M. R.; Borchardt, L.; Heerwig, A.; Liu, Q.; Kaskel, S., Highly porous nitrogen-doped polyimine-based carbons with adjustable microstructures for CO2 capture. *Journal of Materials Chemistry A* **2013,** *1*, (36).

66. Modak, A.; Bhaumik, A., Porous carbon derived via KOH activation of a hypercrosslinked porous organic polymer for efficient CO2, CH4, H2 adsorptions and high CO2/N2 selectivity. *J. Solid State Chem.* **2015,** *232*, 157-162.

67. Wickramaratne, N. P.; Jaroniec, M., Importance of small micropores in CO2capture by phenolic resin-based activated carbon spheres. *J. Mater. Chem. A* **2013,** *1*, (1), 112-116.

68. Chen, J.; Yang, J.; Hu, G.; Hu, X.; Li, Z.; Shen, S.; Radosz, M.; Fan, M., Enhanced CO2 Capture Capacity of Nitrogen-Doped Biomass-Derived Porous Carbons. *ACS Sustainable Chemistry & Engineering* **2016,** *4*, (3), 1439-1445.

69. Silvestre-Albero, J.; Wahby, A.; Sepulveda-Escribano, A.; Martinez-Escandell, M.; Kaneko, K.; Rodriguez-Reinoso, F., Ultrahigh CO2 adsorption capacity on carbon molecular sieves at room temperature. *Chem Commun (Camb)* **2011,** *47*, (24), 6840-2.

70. Cai, J.; Qi, J.; Yang, C.; Zhao, X., Poly(vinylidene chloride)-based carbon with ultrahigh microporosity and outstanding performance for CH4 and H2 storage and CO2 capture. *ACS Appl Mater Interfaces* **2014,** *6*, (5), 3703-11.

71. Heidari, A.; Younesi, H.; Rashidi, A.; Ghoreyshi, A. A., Evaluation of CO2 adsorption with eucalyptus wood based activated carbon modified by ammonia solution through heat treatment. *Chem. Eng. J.* **2014,** *254*, 503-513.

72. Heo, Y.-J.; Park, S.-J., A role of steam activation on CO2 capture and separation of narrow microporous carbons produced from cellulose fibers. *Energy* **2015,** *91*, 142-150.

73. Seema, H.; Kemp, K. C.; Le, N. H.; Park, S.-W.; Chandra, V.; Lee, J. W.; Kim, K. S., Highly selective CO2 capture by S-doped microporous carbon materials. *Carbon* **2014,** *66*, 320-326.

74. Presser, V.; McDonough, J.; Yeon, S.-H.; Gogotsi, Y., Effect of pore size on carbon dioxide sorption by carbide derived carbon. *Energy & Environmental Science* **2011,** *4*, (8).

75. Wang, H.; Cheng, Z.; Liao, Y.; Li, J.; Weber, J.; Thomas, A.; Faul, C. F. J., Conjugated Microporous Polycarbazole Networks as Precursors for Nitrogen-Enriched Microporous Carbons for CO2 Storage and Electrochemical Capacitors. *Chem. Mater.* **2017,** *29*, (11), 4885-4893.

76. Heidari, A.; Younesi, H.; Rashidi, A.; Ghoreyshi, A., Adsorptive removal of CO2 on highly microporous activated carbons prepared from Eucalyptus camaldulensis wood: Effect of chemical activation. *Journal of the Taiwan Institute of Chemical Engineers* **2014,** *45*, (2), 579-588.

77. Sevilla, M.; Valle-Vigón, P.; Fuertes, A. B., N-Doped Polypyrrole-Based Porous Carbons for CO2Capture. *Adv. Funct. Mater.* **2011,** *21*, (14), 2781-2787.

78. Loganathan, S.; Tikmani, M.; Ghoshal, A. K., Novel pore-expanded MCM-41 for CO2 capture: synthesis and characterization. *Langmuir* **2013,** *29*, (10), 3491-9.

79. Guo, L.; Yang, J.; Hu, G.; Hu, X.; Wang, L.; Dong, Y.; DaCosta, H.; Fan, M., Role of Hydrogen Peroxide Preoxidizing on CO2 Adsorption of Nitrogen-Doped Carbons Produced from Coconut Shell. *ACS Sustainable Chemistry & Engineering* **2016,** *4*, (5), 2806-2813.

80. Yi, H.; Li, F.; Ning, P.; Tang, X.; Peng, J.; Li, Y.; Deng, H., Adsorption separation of CO2, CH4, and N2 on microwave activated carbon. *Chem. Eng. J.* **2013,** *215-216*, 635-642.

81. Gong, J.; Michalkiewicz, B.; Chen, X.; Mijowska, E.; Liu, J.; Jiang, Z.; Wen, X.; Tang, T., Sustainable Conversion of Mixed Plastics into Porous Carbon Nanosheets with High Performances in Uptake of Carbon Dioxide and Storage of Hydrogen. *ACS Sustainable Chemistry & Engineering* **2014,** *2*, (12), 2837-2844.

82. Zhu, X.; Hillesheim, P. C.; Mahurin, S. M.; Wang, C.; Tian, C.; Brown, S.; Luo, H.; Veith, G. M.; Han, K. S.; Hagaman, E. W.; Liu, H.; Dai, S., Efficient CO(2) capture by porous, nitrogen-doped carbonaceous adsorbents derived from task-specific ionic liquids. *ChemSusChem* **2012,** *5*, (10), 1912-7.

83. Sevilla, M.; Fuertes, A. B., CO2 adsorption by activated templated carbons. *J. Colloid Interface Sci.* **2012,** *366*, (1), 147-154.

84. Ello, A. S.; de Souza, L. K. C.; Trokourey, A.; Jaroniec, M., Development of microporous carbons for CO2 capture by KOH activation of African palm shells. *Journal of CO2 Utilization* **2013,** *2*, 35-38.

85. Serafin, J.; Narkiewicz, U.; Morawski, A. W.; Wróbel, R. J.; Michalkiewicz, B., Highly microporous activated carbons from biomass for CO 2 capture and effective micropores at different conditions. *Journal of CO2 Utilization* **2017,** *18*, 73-79.

86. Wei, J.; Zhou, D.; Sun, Z.; Deng, Y.; Xia, Y.; Zhao, D., A Controllable Synthesis of Rich Nitrogen-Doped Ordered Mesoporous Carbon for CO2Capture and Supercapacitors. *Adv. Funct. Mater.* **2013,** *23*, (18), 2322-2328.

87. Coromina, H. M.; Walsh, D. A.; Mokaya, R., Biomass-derived activated carbon with simultaneously enhanced CO2 uptake for both pre and post combustion capture applications. *Journal of Materials Chemistry A* **2016,** *4*, (1), 280-289.

88. Primo, A.; Forneli, A.; Corma, A.; Garcia, H., From biomass wastes to highly efficient CO(2) adsorbents: graphitisation of chitosan and alginate biopolymers. *ChemSusChem* **2012,** *5*, (11), 2207-14.

89. Kongnoo, A.; Intharapat, P.; Worathanakul, P.; Phalakornkule, C., Diethanolamine impregnated palm shell activated carbon for CO 2 adsorption at elevated temperatures. *Journal of Environmental Chemical Engineering* **2016,** *4*, (1), 73-81.

90. Sevilla, M.; Fuertes, A. B., Sustainable porous carbons with a superior performance for CO2 capture. *Energy & Environmental Science* **2011,** *4*, (5).

91. Rao, L.; Liu, S.; Wang, L.; Ma, C.; Wu, J.; An, L.; Hu, X., N-doped porous carbons from low-temperature and single-step sodium amide activation of carbonized water chestnut shell with excellent CO2 capture performance. *Chem. Eng. J.* **2019,** *359*, 428-435.

92. Yang, M.; Guo, L.; Hu, G.; Hu, X.; Xu, L.; Chen, J.; Dai, W.; Fan, M., Highly Cost-Effective Nitrogen-Doped Porous Coconut Shell-Based CO2 Sorbent Synthesized by Combining Ammoxidation with KOH Activation. *Environ. Sci. Technol.* **2015,** *49*, (11), 7063-70.

93. Lee, S. Y.; Park, S. J., Determination of the optimal pore size for improved CO2 adsorption in activated carbon fibers. *J. Colloid Interface Sci.* **2013,** *389*, (1), 230-5.

94. Kou, J.; Sun, L.-B., Nitrogen-Doped Porous Carbons Derived from Carbonization of a Nitrogen-Containing Polymer: Efficient Adsorbents for Selective CO2 Capture. *Industrial & Engineering Chemistry Research* **2016,** *55*, (41), 10916-10925.

95. Alabadi, A.; Razzaque, S.; Yang, Y.; Chen, S.; Tan, B., Highly porous activated carbon materials from carbonized biomass with high CO2 capturing capacity. *Chem. Eng. J.* **2015,** *281*, 606-612.

96. Lee, J.-S.; Kim, J.-H.; Kim, J.-T.; Suh, J.-K.; Lee, J.-M.; Lee, C.-H., Adsorption Equilibria of CO2 on Zeolite 13X and Zeolite X/Activated Carbon Composite. *J. Chem. Eng. Data* **2002,** *47*, 1237-1242.

97. Castrillon, M. C.; Moura, K. O.; Alves, C. A.; Bastos-Neto, M.; Azevedo, D. C. S.; Hofmann, J.; Möllmer, J.; Einicke, W.-D.; Gläser, R., CO2 and H2S Removal from CH4-Rich Streams by Adsorption on Activated Carbons Modified with K2CO3, NaOH, or Fe2O3. *Energy & Fuels* **2016,** *30*, (11), 9596-9604.

98. Yue, L.; Rao, L.; Wang, L.; An, L.; Hou, C.; Ma, C.; DaCosta, H.; Hu, X., Efficient CO2 Adsorption on Nitrogen-Doped Porous Carbons Derived from d-Glucose. *Energy & Fuels* **2018,** *32*, (6), 6955-6963.

99. Nelson, K. M.; Mahurin, S. M.; Mayes, R. T.; Williamson, B.; Teague, C. M.; Binder, A. J.; Baggetto, L.; Veith, G. M.; Dai, S., Preparation and CO2 adsorption properties of soft-templated mesoporous carbons derived from chestnut tannin precursors. *Micropor. Mesopor. Mater.* **2016,** *222*, 94-103.

100. Parshetti, G. K.; Chowdhury, S.; Balasubramanian, R., Biomass derived low-cost microporous adsorbents for efficient CO 2 capture. *Fuel* **2015,** *148*, 246-254.

101. He, J.; To, J. W. F.; Psarras, P. C.; Yan, H.; Atkinson, T.; Holmes, R. T.; Nordlund, D.; Bao, Z.; Wilcox, J., Tunable Polyaniline-Based Porous Carbon with Ultrahigh Surface Area for CO2Capture at Elevated Pressure. *Advanced Energy Materials* **2016,** *6*, (14).

102. Qian, D.; Lei, C.; Wang, E. M.; Li, W. C.; Lu, A. H., A method for creating microporous carbon materials with excellent CO2-adsorption capacity and selectivity. *ChemSusChem* **2014,** *7*, (1), 291-8.

103. Lee, S.-Y.; Park, S.-J., Carbon dioxide adsorption performance of ultramicroporous carbon derived from poly(vinylidene fluoride). *J. Anal. Appl. Pyrolysis* **2014,** *106*, 147-151.

104. Gadipelli, S.; Guo, Z. X., Tuning of ZIF-Derived Carbon with High Activity, Nitrogen Functionality, and Yield - A Case for Superior CO2 Capture. *ChemSusChem* **2015,** *8*, (12), 2123-32.

105. Rashidi, N. A.; Yusup, S.; Borhan, A., Isotherm and Thermodynamic Analysis of Carbon Dioxide on Activated Carbon. *Procedia Engineering* **2016,** *148*, 630-637.

106. Ren, X.; Li, H.; Chen, J.; Wei, L.; Modak, A.; Yang, H.; Yang, Q., N-doped porous carbons with exceptionally high CO2 selectivity for CO2 capture. *Carbon* **2017,** *114*, 473-481.

107. Shao, L.; Wang, S.; Liu, M.; Huang, J.; Liu, Y.-N., Triazine-based hyper-cross-linked polymers derived porous carbons for CO2 capture. *Chem. Eng. J.* **2018,** *339*, 509-518.

108. Sawant, S. Y.; Munusamy, K.; Somani, R. S.; John, M.; Newalkar, B. L.; Bajaj, H. C., Precursor suitability and pilot scale production of super activated carbon for greenhouse gas adsorption and fuel gas storage. *Chem. Eng. J.* **2017,** *315*, 415-425.

109. Zhou, J.; Li, Z.; Xing, W.; Shen, H.; Bi, X.; Zhu, T.; Qiu, Z.; Zhuo, S., A New Approach to Tuning Carbon Ultramicropore Size at Sub-Angstrom Level for Maximizing Specific Capacitance and CO2Uptake. *Adv. Funct. Mater.* **2016,** *26*, (44), 7955-7964.

110. Liu, L.; Deng, Q.-F.; Hou, X.-X.; Yuan, Z.-Y., User-friendly synthesis of nitrogen-containing polymer and microporous carbon spheres for efficient CO2 capture. *Journal of Materials Chemistry* **2012,** *22*, (31).

111. To, J. W.; He, J.; Mei, J.; Haghpanah, R.; Chen, Z.; Kurosawa, T.; Chen, S.; Bae, W. G.; Pan, L.; Tok, J. B.; Wilcox, J.; Bao, Z., Hierarchical N-Doped Carbon as CO2 Adsorbent with High CO2 Selectivity from Rationally Designed Polypyrrole Precursor. *J. Am. Chem. Soc.* **2016,** *138*, (3), 1001-9.

112. Sevilla, M.; Parra, J. B.; Fuertes, A. B., Assessment of the role of micropore size and N-doping in CO2 capture by porous carbons. *ACS Appl Mater Interfaces* **2013,** *5*, (13), 6360-8.

113. Sangchoom, W.; Mokaya, R., Valorization of Lignin Waste: Carbons from Hydrothermal Carbonization of Renewable Lignin as Superior Sorbents for CO2 and Hydrogen Storage. *ACS Sustainable Chemistry & Engineering* **2015,** *3*, (7), 1658-1667.

114. Kou, J.; Sun, L.-B., Fabrication of nitrogen-doped porous carbons for highly efficient CO2 capture: rational choice of a polymer precursor. *Journal of Materials Chemistry A* **2016,** *4*, (44), 17299-17307.

115. Jalilov, A. S.; Ruan, G.; Hwang, C. C.; Schipper, D. E.; Tour, J. J.; Li, Y.; Fei, H.; Samuel, E. L.; Tour, J. M., Asphalt-derived high surface area activated porous carbons for carbon dioxide capture. *ACS Appl Mater Interfaces* **2015,** *7*, (2), 1376-82.

116. Sevilla, M.; Falco, C.; Titirici, M.-M.; Fuertes, A. B., High-performance CO2 sorbents from algae. *RSC Advances* **2012,** *2*, (33).

117. Labus, K.; Gryglewicz, S.; Machnikowski, J., Granular KOH-activated carbons from coal-based cokes and their CO2 adsorption capacity. *Fuel* **2014,** *118*, 9-15.

118. Ma, X.; Li, Y.; Cao, M.; Hu, C., A novel activating strategy to achieve highly porous carbon monoliths for CO2 capture. *J. Mater. Chem. A* **2014,** *2*, (13), 4819-4826.

119. Deng, Q.-F.; Liu, L.; Lin, X.-Z.; Du, G.; Liu, Y.; Yuan, Z.-Y., Synthesis and CO2 capture properties of mesoporous carbon nitride materials. *Chem. Eng. J.* **2012,** *203*, 63-70.

120. Wang, L.; Rao, L.; Xia, B.; Wang, L.; Yue, L.; Liang, Y.; DaCosta, H.; Hu, X., Highly efficient CO2 adsorption by nitrogen-doped porous carbons synthesized with low-temperature sodium amide activation. *Carbon* **2018,** *130*, 31-40.

121. Hao, W.; Björkman, E.; Lilliestråle, M.; Hedin, N., Activated carbons prepared from hydrothermally carbonized waste biomass used as adsorbents for CO2. *Applied Energy* **2013,** *112*, 526-532.

122. Deng, S.; Hu, B.; Chen, T.; Wang, B.; Huang, J.; Wang, Y.; Yu, G., Activated carbons prepared from peanut shell and sunflower seed shell for high CO2 adsorption. *Adsorption* **2015,** *21*, (1-2), 125-133.

123. Ashourirad, B.; Arab, P.; Islamoglu, T.; Cychosz, K. A.; Thommes, M.; El-Kaderi, H. M., A cost-effective synthesis of heteroatom-doped porous carbons as efficient CO2 sorbents. *Journal of Materials Chemistry A* **2016,** *4*, (38), 14693-14702.

124. Fan, X.; Zhang, L.; Zhang, G.; Shu, Z.; Shi, J., Chitosan derived nitrogen-doped microporous carbons for high performance CO2 capture. *Carbon* **2013,** *61*, 423-430.

125. Bai, F.; Xia, Y.; Chen, B.; Su, H.; Zhu, Y., Preparation and carbon dioxide uptake capacity of N-doped porous carbon materials derived from direct carbonization of zeolitic imidazolate framework. *Carbon* **2014,** *79*, 213-226.

126. Adeniran, B.; Mokaya, R., Is N-Doping in Porous Carbons Beneficial for CO2 Storage? Experimental Demonstration of the Relative Effects of Pore Size and N-Doping. *Chem. Mater.* **2016,** *28*, (3), 994-1001.

127. Meng, L. Y.; Park, S. J., Effect of heat treatment on CO2 adsorption of KOH-activated graphite nanofibers. *J. Colloid Interface Sci.* **2010,** *352*, (2), 498-503.

128. Wei, H.; Deng, S.; Hu, B.; Chen, Z.; Wang, B.; Huang, J.; Yu, G., Granular bamboo-derived activated carbon for high CO(2) adsorption: the dominant role of narrow micropores. *ChemSusChem* **2012,** *5*, (12), 2354-60.

129. Ello, A. S.; de Souza, L. K. C.; Trokourey, A.; Jaroniec, M., Coconut shell-based microporous carbons for CO2 capture. *Micropor. Mesopor. Mater.* **2013,** *180*, 280-283.

130. Zhang, C.; Song, W.; Ma, Q.; Xie, L.; Zhang, X.; Guo, H., Enhancement of CO2 Capture on Biomass-Based Carbon from Black Locust by KOH Activation and Ammonia Modification. *Energy & Fuels* **2016,** *30*, (5), 4181-4190.

131. Chen, C.; Kim, J.; Ahn, W.-S., Efficient carbon dioxide capture over a nitrogen-rich carbon having a hierarchical micro-mesopore structure. *Fuel* **2012,** *95*, 360-364.

132. An, L.; Liu, S.; Wang, L.; Wu, J.; Wu, Z.; Ma, C.; Yu, Q.; Hu, X., Novel Nitrogen-Doped Porous Carbons Derived from Graphene for Effective CO2 Capture. *Industrial & Engineering Chemistry Research* **2019,** *58*, (8), 3349-3358.

133. Srinivas, G.; Krungleviciute, V.; Guo, Z.-X.; Yildirim, T., Exceptional CO2capture in a hierarchically porous carbon with simultaneous high surface area and pore volume. *Energy Environ. Sci.* **2014,** *7*, (1), 335-342.

134. Li, Y.; Zou, B.; Hu, C.; Cao, M., Nitrogen-doped porous carbon nanofiber webs for efficient CO2 capture and conversion. *Carbon* **2016,** *99*, 79-89.

135. Zhu, B.; Shang, C.; Guo, Z., Naturally Nitrogen and Calcium-Doped Nanoporous Carbon from Pine Cone with Superior CO2 Capture Capacities. *ACS Sustainable Chemistry & Engineering* **2016,** *4*, (3), 1050-1057.

136. González, A. S.; Plaza, M. G.; Rubiera, F.; Pevida, C., Sustainable biomass-based carbon adsorbents for post-combustion CO2 capture. *Chem. Eng. J.* **2013,** *230*, 456-465.

137. Wang, J.; Senkovska, I.; Oschatz, M.; Lohe, M. R.; Borchardt, L.; Heerwig, A.; Liu, Q.; Kaskel, S., Imine-linked polymer-derived nitrogen-doped microporous carbons with excellent CO2 capture properties. *ACS Appl Mater Interfaces* **2013,** *5*, (8), 3160-7.

138. Ma, X.; Cao, M.; Hu, C., Bifunctional HNO3 catalytic synthesis of N-doped porous carbons for CO2capture. *J. Mater. Chem. A* **2013,** *1*, (3), 913-918.

139. Singh, G.; Kim, I. Y.; Lakhi, K. S.; Srivastava, P.; Naidu, R.; Vinu, A., Single step synthesis of activated bio-carbons with a high surface area and their excellent CO2 adsorption capacity. *Carbon* **2017,** *116*, 448-455.

140. de Souza, L. K. C.; Wickramaratne, N. P.; Ello, A. S.; Costa, M. J. F.; da Costa, C. E. F.; Jaroniec, M., Enhancement of CO2 adsorption on phenolic resin-based mesoporous carbons by KOH activation. *Carbon* **2013,** *65*, 334-340.

141. Wickramaratne, N. P.; Jaroniec, M., Activated carbon spheres for CO2 adsorption. *ACS Appl Mater Interfaces* **2013,** *5*, (5), 1849-55.

142. Shen, W.; Zhang, S.; He, Y.; Li, J.; Fan, W., Hierarchical porous polyacrylonitrile-based activated carbon fibers for CO2 capture. *Journal of Materials Chemistry* **2011,** *21*, (36).

143. Ludwinowicz, J.; Jaroniec, M., Effect of activating agents on the development of microporosity in polymeric-based carbon for CO2 adsorption. *Carbon* **2015,** *94*, 673-679.

144. Kim, Y. K.; Kim, G. M.; Lee, J. W., Highly porous N-doped carbons impregnated with sodium for efficient CO2 capture. *Journal of Materials Chemistry A* **2015,** *3*, (20), 10919-10927.

145. Zhao, Y.; Zhao, L.; Yao, K. X.; Yang, Y.; Zhang, Q.; Han, Y., Novel porous carbon materials with ultrahigh nitrogen contents for selective CO2 capture. *Journal of Materials Chemistry* **2012,** *22*, (37).

146. Song, M.; Jin, B.; Xiao, R.; Yang, L.; Wu, Y.; Zhong, Z.; Huang, Y., The comparison of two activation techniques to prepare activated carbon from corn cob. *Biomass Bioenergy* **2013,** *48*, 250-256.

147. Sevilla, M.; Al-Jumialy, A. S. M.; Fuertes, A. B.; Mokaya, R., Optimization of the Pore Structure of Biomass-Based Carbons in Relation to Their Use for CO2 Capture under Low- and High-Pressure Regimes. *ACS Appl Mater Interfaces* **2018,** *10*, (2), 1623-1633.

148. Singh, G.; Lakhi, K. S.; Sathish, C. I.; Ramadass, K.; Yang, J.-H.; Vinu, A., Oxygen-Functionalized Mesoporous Activated Carbons Derived from Casein and Their Superior CO2 Adsorption Capacity at Both Low- and High-Pressure Regimes. *ACS Applied Nano Materials* **2019,** *2*, (3), 1604-1613.

149. Shao, L.; Sang, Y.; Liu, N.; Liu, J.; Zhan, P.; Huang, J.; Chen, J., Selectable Microporous Carbons Derived from Poplar Wood by Three Preparation Routes for CO2 Capture. *ACS Omega* **2020,** *5*, (28), 17450-17462.

150. Chen, Z.; Zhuo, H.; Hu, Y.; Zhong, L.; Peng, X.; Jing, S.; Liu, Q.; Zhang, X.; Liu, C.; Sun, R., Self-Biotemplate Preparation of Hierarchical Porous Carbon with Rational Mesopore Ratio and High Oxygen Content for an Ultrahigh Energy-Density Supercapacitor. *ACS Sustainable Chemistry & Engineering* **2018,** *6*, (5), 7138-7150.

151. Shi, J.; Yan, N.; Cui, H.; Xu, J.; Liu, Y.; Zhang, S., Salt Template Synthesis of Nitrogen and Sulfur Co-Doped Porous Carbons as CO2 Adsorbents. *ACS Sustainable Chemistry & Engineering* **2019,** *7*, (24), 19513-19521.

152. Singh, G.; Lakhi, K. S.; Ramadass, K.; Sathish, C. I.; Vinu, A., High-Performance Biomass-Derived Activated Porous Biocarbons for Combined Pre- and Post-Combustion CO2 Capture. *ACS Sustainable Chemistry & Engineering* **2019,** *7*, (7), 7412-7420.

153. Yang, F.; Wang, J.; Liu, L.; Zhang, P.; Yu, W.; Deng, Q.; Zeng, Z.; Deng, S., Synthesis of Porous Carbons with High N-Content from Shrimp Shells for Efficient CO2-Capture and Gas Separation. *ACS Sustainable Chemistry & Engineering* **2018,** *6*, (11), 15550-15559.

154. Vorokhta, M.; Morávková, J.; Dopita, M.; Zhigunov, A.; Šlouf, M.; Pilař, R.; Sazama, P., Effect of micropores on CO2 capture in ordered mesoporous CMK-3 carbon at atmospheric pressure. *Adsorption* **2021**.

155. Chen, C.; Yu, Y.; He, C.; Wang, L.; Huang, H.; Albilali, R.; Cheng, J.; Hao, Z., Efficient capture of CO2 over ordered micro-mesoporous hybrid carbon nanosphere. *Appl. Surf. Sci.* **2018,** *439*, 113-121.

156. Ma, X.; Li, L.; Chen, R.; Wang, C.; Li, H.; Wang, S., Heteroatom-doped nanoporous carbon derived from MOF-5 for CO2 capture. *Appl. Surf. Sci.* **2018,** *435*, 494-502.

157. Qin, F.; Guo, Z.; Wang, J.; Qu, S.; Zuo, P.; Shen, W., Nitrogen-doped asphaltene-based porous carbon nanosheet for carbon dioxide capture. *Appl. Surf. Sci.* **2019,** *491*, 607-615.

158. Serafin, J.; Baca, M.; Biegun, M.; Mijowska, E.; Kaleńczuk, R. J.; Sreńscek-Nazzal, J.; Michalkiewicz, B., Direct conversion of biomass to nanoporous activated biocarbons for high CO2 adsorption and supercapacitor applications. *Appl. Surf. Sci.* **2019,** *497*.

159. Huang, G.; Wu, X.; Hou, Y.; Cai, J., Sustainable porous carbons from garlic peel biowaste and KOH activation with an excellent CO2 adsorption performance. *Biomass Conversion and Biorefinery* **2019,** *10*, (2), 267-276.

160. Ismail, I. S.; Singh, G.; Smith, P.; Kim, S.; Yang, J.-H.; Joseph, S.; Yusup, S.; Singh, M.; Bansal, V.; Talapaneni, S. N.; Vinu, A., Oxygen functionalized porous activated biocarbons with high surface area derived from grape marc for enhanced capture of CO2 at elevated-pressure. *Carbon* **2020,** *160*, 113-124.

161. Li, D.; Zhou, J.; Zhang, Z.; Li, L.; Tian, Y.; Lu, Y.; Qiao, Y.; Li, J.; Wen, L., Improving low-pressure CO2 capture performance of N-doped active carbons by adjusting flow rate of protective gas during alkali activation. *Carbon* **2017,** *114*, 496-503.

162. Sethia, G.; Sayari, A., Comprehensive study of ultra-microporous nitrogen-doped activated carbon for CO2 capture. *Carbon* **2015,** *93*, 68-80.

163. Zhang, Z.; Luo, D.; Lui, G.; Li, G.; Jiang, G.; Cano, Z. P.; Deng, Y.-P.; Du, X.; Yin, S.; Chen, Y.; Zhang, M.; Yan, Z.; Chen, Z., In-situ ion-activated carbon nanospheres with tunable ultramicroporosity for superior CO2 capture. *Carbon* **2019,** *143*, 531-541.

164. Li, Y.; Cao, M., Synthesis of High-Surface-Area Nitrogen-Doped Porous Carbon Microflowers and Their Efficient Carbon Dioxide Capture Performance. *Chem Asian J* **2015,** *10*, (7), 1496-504.

165. Boujibar, O.; Ghamouss, F.; Ghosh, A.; Achak, O.; Chafik, T., Efficient CO2 Capture by Ultra‐high Microporous Activated Carbon Made from Natural Coal. *Chemical Engineering & Technology* **2020,** *44*, (1), 148-155.

166. González, B.; Manyà, J. J., Activated olive mill waste-based hydrochars as selective adsorbents for CO2 capture under postcombustion conditions. *Chemical Engineering and Processing - Process Intensification* **2020,** *149*.

167. Chen, C.; Huang, H.; Yu, Y.; Shi, J.; He, C.; Albilali, R.; Pan, H., Template-free synthesis of hierarchical porous carbon with controlled morphology for CO2 efficient capture. *Chem. Eng. J.* **2018,** *353*, 584-594.

168. Deng, S.; Chen, T.; Zhao, T.; Yao, X.; Wang, B.; Huang, J.; Wang, Y.; Yu, G., Role of micropores and nitrogen-containing groups in CO 2 adsorption on indole-3-butyric acid potassium derived carbons. *Chem. Eng. J.* **2016,** *286*, 98-105.

169. Durán-Jiménez, G.; Stevens, L. A.; Kostas, E. T.; Hernández-Montoya, V.; Robinson, J. P.; Binner, E. R., Rapid, simple and sustainable synthesis of ultra-microporous carbons with high performance for CO2 uptake, via microwave heating. *Chem. Eng. J.* **2020,** *388*.

170. Guo, Q.; Chen, C.; Li, Z.; Li, X.; Wang, H.; Feng, N.; Wan, H.; Guan, G., Controllable construction of N-enriched hierarchically porous carbon nanosheets with enhanced performance for CO2 capture. *Chem. Eng. J.* **2019,** *371*, 414-423.

171. Kim, M.-J.; Choi, S. W.; Kim, H.; Mun, S.; Lee, K. B., Simple synthesis of spent coffee ground-based microporous carbons using K2CO3 as an activation agent and their application to CO2 capture. *Chem. Eng. J.* **2020,** *397*.

172. Li, J.; Michalkiewicz, B.; Min, J.; Ma, C.; Chen, X.; Gong, J.; Mijowska, E.; Tang, T., Selective preparation of biomass-derived porous carbon with controllable pore sizes toward highly efficient CO2 capture. *Chem. Eng. J.* **2019,** *360*, 250-259.

173. Lou, Y.-C.; Qi, S.-C.; Xue, D.-M.; Gu, C.; Zhou, R.; Liu, X.-Q.; Sun, L.-B., Solvent-free synthesis of N-containing polymers with high cross-linking degree to generate N-doped porous carbons for high-efficiency CO2 capture. *Chem. Eng. J.* **2020,** *399*.

174. Manyà, J. J.; González, B.; Azuara, M.; Arner, G., Ultra-microporous adsorbents prepared from vine shoots-derived biochar with high CO2 uptake and CO2/N2 selectivity. *Chem. Eng. J.* **2018,** *345*, 631-639.

175. Peng, A.-Z.; Qi, S.-C.; Liu, X.; Xue, D.-M.; Peng, S.-S.; Yu, G.-X.; Liu, X.-Q.; Sun, L.-B., Fabrication of N-doped porous carbons for enhanced CO2 capture: Rational design of an ammoniated polymer precursor. *Chem. Eng. J.* **2019,** *369*, 170-179.

176. Rao, L.; Ma, R.; Liu, S.; Wang, L.; Wu, Z.; Yang, J.; Hu, X., Nitrogen enriched porous carbons from d-glucose with excellent CO2 capture performance. *Chem. Eng. J.* **2019,** *362*, 794-801.

177. Shao, L.; Sang, Y.; Huang, J.; Liu, Y.-N., Triazine-based hyper-cross-linked polymers with inorganic-organic hybrid framework derived porous carbons for CO2 capture. *Chem. Eng. J.* **2018,** *353*, 1-14.

178. Wu, Y.; Wang, J.; Muhammad, Y.; Subhan, S.; Zhang, Y.; Ling, Y.; Li, J.; Zhao, Z.; Zhao, Z., Pyrrolic N-enriched carbon fabricated from dopamine-melamine via fast mechanochemical copolymerization for highly selective separation of CO2 from CO2/N2. *Chem. Eng. J.* **2018,** *349*, 92-100.

179. Yuan, H.; Chen, J.; Li, D.; Chen, H.; Chen, Y., 5 Ultramicropore-rich renewable porous carbon from biomass tar with excellent adsorption capacity and selectivity for CO2 capture. *Chem. Eng. J.* **2019,** *373*, 171-178.

180. Zhang, Y.; Liu, L.; Zhang, P.; Wang, J.; Xu, M.; Deng, Q.; Zeng, Z.; Deng, S., Ultra-high surface area and nitrogen-rich porous carbons prepared by a low-temperature activation method with superior gas selective adsorption and outstanding supercapacitance performance. *Chem. Eng. J.* **2019,** *355*, 309-319.

181. Singh, M. G.; Lakhi, K. S.; Park, D. H.; Srivastava, P.; Naidu, R.; Vinu, A., Facile One‐Pot Synthesis of Activated Porous Biocarbons with a High Nitrogen Content for CO

2

Capture. *ChemNanoMat* **2017,** *4*, (3), 281-290.

182. Cui, H.; Xu, J.; Shi, J.; Yan, N.; Liu, Y.; Zhang, S., Zinc Nitrate as an Activation Agent for the Synthesis of Nitrogen-Doped Porous Carbon and Its Application in CO2 Adsorption. *Energy & Fuels* **2020,** *34*, (5), 6069-6076.

183. Li, D.; Chen, J.; Fan, Y.; Deng, L.; Shan, R.; Chen, H.; Yuan, H.; Chen, Y., Biomass-Tar-Enabled Nitrogen-Doped Highly Ultramicroporous Carbon as an Efficient Absorbent for CO2 Capture. *Energy & Fuels* **2019,** *33*, (9), 8927-8936.

184. Liu, S.; Li, Q.; Wang, L.; Ma, R.; Zou, J.; Huang, L.; Hu, X., Facile Single-Step Synthesis of Porous Carbons as Efficient CO2 Adsorbents. *Energy & Fuels* **2019,** *33*, (11), 11544-11551.

185. Liu, S.; Yang, P.; Wang, L.; Li, Y.; Wu, Z.; Ma, R.; Wu, J.; Hu, X., Nitrogen-Doped Porous Carbons from Lotus Leaf for CO2 Capture and Supercapacitor Electrodes. *Energy & Fuels* **2019,** *33*, (7), 6568-6576.

186. Pang, R.; Lu, T.; Shao, J.; Wang, L.; Wu, X.; Qian, X.; Hu, X., Highly Efficient Nitrogen-Doped Porous Carbonaceous CO2 Adsorbents Derived from Biomass. *Energy & Fuels* **2020,** *35*, (2), 1620-1628.

187. Rao, L.; Liu, S.; Chen, J.; Wang, L.; An, L.; Yang, P.; Hu, X., Single-Step Synthesis of Nitrogen-Doped Porous Carbons for CO2 Capture by Low-Temperature Sodium Amide Activation of Petroleum Coke. *Energy & Fuels* **2018,** *32*, (12), 12787-12794.

188. Song, C.; Liu, M.; Ye, W.; Liu, Y.; Zhang, H.; Lu, R.; Zhang, S., Nitrogen-Containing Porous Carbon for Highly Selective and Efficient CO2 Capture. *Energy & Fuels* **2019,** *33*, (12), 12601-12609.

189. Yang, J.; Yue, L.; Hu, X.; Wang, L.; Zhao, Y.; Lin, Y.; Sun, Y.; DaCosta, H.; Guo, L., Efficient CO2 Capture by Porous Carbons Derived from Coconut Shell. *Energy & Fuels* **2017,** *31*, (4), 4287-4293.

190. Zhou, J.; Li, D.; Wang, Y.; Tian, Y.; Zhang, Z.; Wei, L.; Feng, W., Effect of the Feedstock Type on the Volumetric Low-Pressure CO2 Capture Performance of Activated Carbons. *Energy & Fuels* **2018,** *32*, (12), 12711-12720.

191. Li, D.; Zhou, J.; Wang, Y.; Tian, Y.; Wei, L.; Zhang, Z.; Qiao, Y.; Li, J., Effects of activation temperature on densities and volumetric CO2 adsorption performance of alkali-activated carbons. *Fuel* **2019,** *238*, 232-239.

192. Guo, J.; Wang, L.; Huang, J., Porphyrin-Based Triazine Polymers and Their Derived Porous Carbons for Efficient CO2 Capture. *Industrial & Engineering Chemistry Research* **2020,** *59*, (7), 3205-3212.

193. Karimi, M.; C. Silva, J. A.; Gonçalves, C. N. d. P.; L. Diaz de Tuesta, J.; Rodrigues, A. E.; Gomes, H. T., CO2 Capture in Chemically and Thermally Modified Activated Carbons Using Breakthrough Measurements: Experimental and Modeling Study. *Industrial & Engineering Chemistry Research* **2018,** *57*, (32), 11154-11166.

194. Li, L.; Wang, X.-F.; Zhong, J.-J.; Qian, X.; Song, S.-L.; Zhang, Y.-G.; Li, D.-H., Nitrogen-Enriched Porous Polyacrylonitrile-Based Carbon Fibers for CO2 Capture. *Industrial & Engineering Chemistry Research* **2018,** *57*, (34), 11608-11616.

195. Liu, S.; Ma, R.; Hu, X.; Wang, L.; Wang, X.; Radosz, M.; Fan, M., CO2 Adsorption on Hazelnut-Shell-Derived Nitrogen-Doped Porous Carbons Synthesized by Single-Step Sodium Amide Activation. *Industrial & Engineering Chemistry Research* **2019,** *59*, (15), 7046-7053.

196. Liu, X.; Qi, S.-C.; Peng, A.-Z.; Xue, D.-M.; Liu, X.-Q.; Sun, L.-B., Foaming Effect of a Polymer Precursor with a Low N Content on Fabrication of N-Doped Porous Carbons for CO2 Capture. *Industrial & Engineering Chemistry Research* **2019,** *58*, (25), 11013-11021.

197. Shao, L.; Li, Y.; Huang, J.; Liu, Y.-N., Synthesis of Triazine-Based Porous Organic Polymers Derived N-Enriched Porous Carbons for CO2 Capture. *Industrial & Engineering Chemistry Research* **2018,** *57*, (8), 2856-2865.

198. Wang, Y.; Hu, X.; Hao, J.; Ma, R.; Guo, Q.; Gao, H.; Bai, H., Nitrogen and Oxygen Codoped Porous Carbon with Superior CO2 Adsorption Performance: A Combined Experimental and DFT Calculation Study. *Industrial & Engineering Chemistry Research* **2019,** *58*, (29), 13390-13400.

199. Yang, P.; Rao, L.; Zhu, W.; Wang, L.; Ma, R.; Chen, F.; Lin, G.; Hu, X., Porous Carbons Derived from Sustainable Biomass via a Facile One-Step Synthesis Strategy as Efficient CO2 Adsorbents. *Industrial & Engineering Chemistry Research* **2020,** *59*, (13), 6194-6201.

200. Yue, L.; Rao, L.; Wang, L.; Wang, L.; Wu, J.; Hu, X.; DaCosta, H.; Yang, J.; Fan, M., Efficient CO2 Capture by Nitrogen-Doped Biocarbons Derived from Rotten Strawberries. *Industrial & Engineering Chemistry Research* **2017,** *56*, (47), 14115-14122.

201. Zhang, Y.; Zhang, P.; Yu, W.; Wang, J.; Deng, Q.; Yang, J.; Zeng, Z.; Xu, M.; Deng, S., Facile and Controllable Preparation of Ultramicroporous Biomass-Derived Carbons and Application on Selective Adsorption of Gas-mixtures. *Industrial & Engineering Chemistry Research* **2018,** *57*, (42), 14191-14201.

202. Han, J.; Zhang, L.; Zhao, B.; Qin, L.; Wang, Y.; Xing, F., The N-doped activated carbon derived from sugarcane bagasse for CO2 adsorption. *Industrial Crops and Products* **2019,** *128*, 290-297.

203. Cui, H.; Xu, J.; Shi, J.; You, S.; Zhang, C.; Yan, N.; Liu, Y.; Chen, G., Evaluation of different potassium salts as activators for hierarchically porous carbons and their applications in CO2 adsorption. *J. Colloid Interface Sci.* **2021,** *583*, 40-49.

204. Ghosh, S.; Sarathi, R.; Ramaprabhu, S., Magnesium oxide modified nitrogen-doped porous carbon composite as an efficient candidate for high pressure carbon dioxide capture and methane storage. *J. Colloid Interface Sci.* **2019,** *539*, 245-256.

205. Manmuanpom, N.; Thubsuang, U.; Dubas, S. T.; Wongkasemjit, S.; Chaisuwan, T., Enhanced CO2 capturing over ultra-microporous carbon with nitrogen-active species prepared using one-step carbonization of polybenzoxazine for a sustainable environment. *J. Environ. Manage.* **2018,** *223*, 779-786.

206. Liu, S.; Rao, L.; Yang, P.; Wang, X.; Wang, L.; Ma, R.; Yue, L.; Hu, X., Superior CO2 uptake on nitrogen doped carbonaceous adsorbents from commercial phenolic resin. *J Environ Sci (China)* **2020,** *93*, 109-116.

207. Yang, X.; Yu, M.; Zhao, Y.; Zhang, C.; Wang, X.; Jiang, J.-X., Remarkable gas adsorption by carbonized nitrogen-rich hypercrosslinked porous organic polymers. *J. Mater. Chem. A* **2014,** *2*, (36), 15139-15145.

208. Shao, L.; Liu, M.; Sang, Y.; Zhan, P.; Chen, J.; Huang, J., Nitrogen-Doped Ultrahigh Microporous Carbons Derived from Two Nitrogen-Containing Post-Cross-Linked Polymers for Efficient CO2 Capture. *J. Chem. Eng. Data* **2020,** *65*, (4), 2238-2250.

209. Wang, S.; Xu, Y.; Miao, J.; Liu, M.; Ren, B.; Zhang, L.; Liu, Z., Facile synthesis of microporous carbon xerogels for highly selective CO2 adsorption. *Journal of Cleaner Production* **2020,** *253*.

210. Cao, S.; Zhao, H.; Hu, D.; Wang, J.-a.; Li, M.; Zhou, Z.; Shen, Q.; Sun, N.; Wei, W., Preparation of potassium intercalated carbons by in-situ activation and speciation for CO2 capture from flue gas. *Journal of CO2 Utilization* **2020,** *35*, 59-66.

211. Huang, K.; Li, Z.-L.; Zhang, J.-Y.; Tao, D.-J.; Liu, F.; Dai, S., Simultaneous activation and N-doping of hydrothermal carbons by NaNH2: An effective approach to CO2 adsorbents. *Journal of CO2 Utilization* **2019,** *33*, 405-412.

212. Idrees, M.; Rangari, V.; Jeelani, S., Sustainable packaging waste-derived activated carbon for carbon dioxide capture. *Journal of CO2 Utilization* **2018,** *26*, 380-387.

213. Li, Y.; Wang, X.; Cao, M., Three-dimensional porous carbon frameworks derived from mangosteen peel waste as promising materials for CO2 capture and supercapacitors. *Journal of CO2 Utilization* **2018,** *27*, 204-216.

214. Melouki, R.; Ouadah, A.; Llewellyn, P. L., The CO2 adsorption behavior study on activated carbon synthesized from olive waste. *Journal of CO2 Utilization* **2020,** *42*.

215. Park, J.; Cho, S. Y.; Jung, M.; Lee, K.; Nah, Y.-C.; Attia, N. F.; Oh, H., Efficient synthetic approach for nanoporous adsorbents capable of pre- and post-combustion CO2 capture and selective gas separation. *Journal of CO2 Utilization* **2021,** *45*.

216. Puthiaraj, P.; Ahn, W.-S., Facile synthesis of microporous carbonaceous materials derived from a covalent triazine polymer for CO2 capture. *Journal of Energy Chemistry* **2017,** *26*, (5), 965-971.

217. Fiuza-Jr, R. A.; Andrade, R. C.; Andrade, H. M. C., CO2 capture on KOH-activated carbons derived from yellow mombin fruit stones. *Journal of Environmental Chemical Engineering* **2016,** *4*, (4), 4229-4236.

218. Ghosh, S.; Sevilla, M.; Fuertes, A. B.; Andreoli, E.; Ho, J.; Barron, A. R., Defining a performance map of porous carbon sorbents for high-pressure carbon dioxide uptake and carbon dioxide–methane selectivity. *Journal of Materials Chemistry A* **2016,** *4*, (38), 14739-14751.

219. Li, K.; Tian, S.; Jiang, J.; Wang, J.; Chen, X.; Yan, F., Pine cone shell-based activated carbon used for CO2 adsorption. *Journal of Materials Chemistry A* **2016,** *4*, (14), 5223-5234.

220. Ren, M.; Zhang, T.; Wang, Y.; Jia, Z.; Cai, J., A highly pyridinic N-doped carbon from macroalgae with multifunctional use toward CO2 capture and electrochemical applications. *Journal of Materials Science* **2018,** *54*, (2), 1606-1615.

221. Sun, Y.; Zhao, J.; Wang, J.; Tang, N.; Zhao, R.; Zhang, D.; Guan, T.; Li, K., Sulfur-Doped Millimeter-Sized Microporous Activated Carbon Spheres Derived from Sulfonated Poly(styrene–divinylbenzene) for CO2 Capture. *The Journal of Physical Chemistry C* **2017,** *121*, (18), 10000-10009.

222. Li, D.; Tian, Y.; Li, L.; Li, J.; Zhang, H., Production of highly microporous carbons with large CO2 uptakes at atmospheric pressure by KOH activation of peanut shell char. *J. Porous Mater.* **2015,** *22*, (6), 1581-1588.

223. Ko, W.-Y.; Lu, Y.-J.; Lin, K.-J., One-stage Template-free KOH Activation for Mesopore-enriched Carbons and Their Application in CO2

Capture. *J. Chin. Chem. Soc.* **2017,** *64*, (9), 1041-1047.

224. Li, Q.; Liu, S.; Peng, W.; Zhu, W.; Wang, L.; Chen, F.; Shao, J.; Hu, X., Preparation of biomass-derived porous carbons by a facile method and application to CO2 adsorption. *Journal of the Taiwan Institute of Chemical Engineers* **2020,** *116*, 128-136.

225. Khalili, S.; Jahanshahi, M., Selective CO2 adsorption using N-rich porous carbon derived from KOH-activated polyaniline. *Korean Journal of Chemical Engineering* **2021,** *38*, (4), 862-871.

226. Liu, S.; Sui, Z. Y.; Wang, T. X.; Zhou, H. Y.; Liu, Y. W.; Han, B. H., Tuning Both Surface Chemistry and Porous Properties of Polymer-Derived Porous Carbons for High-Performance Gas Adsorption. *Langmuir* **2019,** *35*, (24), 7650-7658.

227. Senthilkumaran, M.; Saravanan, C.; Puthiaraj, P.; Rameshkumar, P.; Kalaignan, G. P.; Muthu Mareeswaran, P., Poly(s-triazine) based porous carbon for CO2 sequestration. *Mater. Chem. Phys.* **2020,** *256*.

228. Huang, K.; Chai, S.-H.; Mayes, R. T.; Tan, S.; Jones, C. W.; Dai, S., Significantly increasing porosity of mesoporous carbon by NaNH2 activation for enhanced CO2 adsorption. *Micropor. Mesopor. Mater.* **2016,** *230*, 100-108.

229. Kim, H. S.; Kang, M. S.; Lee, S.; Lee, Y.-W.; Yoo, W. C., N-doping and ultramicroporosity-controlled crab shell derived carbons for enhanced CO2 and CH4 sorption. *Micropor. Mesopor. Mater.* **2018,** *272*, 92-100.

230. Shao, L.; Sang, Y.; Huang, J., Imidazole-based hyper-cross-linked polymers derived porous carbons for CO2 capture. *Micropor. Mesopor. Mater.* **2019,** *275*, 131-138.

231. Teague, C. M.; Schott, J. A.; Stieber, C.; Mann, Z. E.; Zhang, P.; Williamson, B. R.; Dai, S.; Mahurin, S. M., Microporous and hollow carbon spheres derived from soft drinks: Promising CO2 separation materials. *Micropor. Mesopor. Mater.* **2019,** *286*, 199-206.

232. Lu, J.; Jiao, C.; Majeed, Z.; Jiang, H., Magnesium and Nitrogen Co-Doped Mesoporous Carbon with Enhanced Microporosity for CO(2) Adsorption. *Nanomaterials (Basel)* **2018,** *8*, (5).

233. Huang, G.-g.; Liu, Y.-f.; Wu, X.-x.; Cai, J.-j., Activated carbons prepared by the KOH activation of a hydrochar from garlic peel and their CO2 adsorption performance. *New Carbon Materials* **2019,** *34*, (3), 247-257.

234. Jin, Z.-e.; Wang, J.-l.; Zhao, R.-j.; Guan, T.-t.; Zhang, D.-d.; Li, K.-x., Synthesis of S, N co-doped porous carbons from polybenzoxazine for CO2 capture. *New Carbon Materials* **2018,** *33*, (5), 392-401.

235. Wu, X.-x.; Zhang, C.-y.; Tian, Z.-w.; Cai, J.-j., Large-surface-area carbons derived from lotus stem waste for efficient CO 2 capture. *New Carbon Materials* **2018,** *33*, (3), 252-261.

236. Jung, M.; Park, J.; Lee, K.; Attia, N. F.; Oh, H., Effective synthesis route of renewable nanoporous carbon adsorbent for high energy gas storage and CO2/N2 selectivity. *Renewable Energy* **2020,** *161*, 30-42.

237. Li, Y.; Xu, R.; Wang, X.; Wang, B.; Cao, J.; Yang, J.; Wei, J., Waste wool derived nitrogen-doped hierarchical porous carbon for selective CO2 capture. *RSC Advances* **2018,** *8*, (35), 19818-19826.

238. Shi, W.; Wang, R.; Liu, H.; Chang, B.; Yang, B.; Zhang, Z., Biowaste-derived 3D honeycomb-like N and S dual-doped hierarchically porous carbons for high-efficient CO2 capture. *RSC Advances* **2019,** *9*, (40), 23241-23253.

239. Hong, S. M.; Jang, E.; Dysart, A. D.; Pol, V. G.; Lee, K. B., CO2 Capture in the Sustainable Wheat-Derived Activated Microporous Carbon Compartments. *Sci Rep* **2016,** *6*, 34590.

240. Ghosh, S.; Barron, A. R., The effect of KOH concentration on chemical activation of porous carbon sorbents for carbon dioxide uptake and carbon dioxide–methane selectivity: the relative formation of micro- (<2 nm) versus meso- (>2 nm) porosity. *Sustainable Energy Fuels* **2017,** *1*, (4), 806-813.

241. Su, W.; Yao, L.; Ran, M.; Sun, Y.; Liu, J.; Wang, X., Adsorption Properties of N2, CH4, and CO2 on Sulfur-Doped Microporous Carbons. *J. Chem. Eng. Data* **2018,** *63*, (8), 2914-2920.

242. Saha, D.; Nelson, K.; Chen, J.; Lu, Y.; Ozcan, S., Adsorption of CO2, CH4, and N2in Micro-Mesoporous Nanographene: A Comparative Study. *J. Chem. Eng. Data* **2015,** *60*, (9), 2636-2645.

243. Rashidi, N. A.; Yusup, S., Potential of palm kernel shell as activated carbon precursors through single stage activation technique for carbon dioxide adsorption. *Journal of Cleaner Production* **2017,** *168*, 474-486.

244. Heavy, S., High-Pressure Adsorption Equilibria of Methane and Carbon Dioxide on Several Activated Carbons. *J. Chem. Eng. Data* **2005,** *50*, 369-376.

245. Azevedo, D. C. S.; Araújo, J. C. S.; Bastos-Neto, M.; Torres, A. E. B.; Jaguaribe, E. F.; Cavalcante, C. L., Microporous activated carbon prepared from coconut shells using chemical activation with zinc chloride. *Micropor. Mesopor. Mater.* **2007,** *100*, (1-3), 361-364.

246. Wang, X.; Lee, B.; Chua, H. T., Methane desorption and adsorption measurements on activated carbon in 281–343 K and pressures to 1.2 MPa. *Journal of Thermal Analysis and Calorimetry* **2011,** *110*, (3), 1475-1485.

247. Zhang, Z.; Xu, M.; Wang, H.; Li, Z., Enhancement of CO2 adsorption on high surface area activated carbon modified by N2, H2 and ammonia. *Chem. Eng. J.* **2010,** *160*, (2), 571-577.

248. Shao, X.; Feng, Z.; Xue, R.; Ma, C.; Wang, W.; Peng, X.; Cao, D., Adsorption of CO2, CH4, CO2/N2 and CO2/CH4 in novel activated carbon beads: Preparation, measurements and simulation. *AlChE J.* **2011,** *57*, (11), 3042-3051.

249. Ning, P.; Li, F.; Yi, H.; Tang, X.; Peng, J.; Li, Y.; He, D.; Deng, H., Adsorption equilibrium of methane and carbon dioxide on microwave-activated carbon. *Sep. Purif. Technol.* **2012,** *98*, 321-326.

250. Thiruvenkatachari, R.; Su, S.; Yu, X. X., Carbon fibre composite for ventilation air methane (VAM) capture. *J. Hazard. Mater.* **2009,** *172*, (2-3), 1505-11.

251. Lozano-Castello, D.; Cazorla-Amoro´s, D.; Linares-Solano, A., Powdered Activated Carbons and Activated Carbon Fibers for Methane Storage: A Comparative Study. *Energy & Fuels* **2002,** *16*, 1321-1328.

252. Lee, J.-W.; Balathanigaimani, M. S.; Kang, H.-C.; Shim, W.-G.; Kim, C.; Moon, H., Methane Storage on Phenol-Based Activated Carbons at (293.15, 303.15, and 313.15) K. *J. Chem. Eng. Data* **2007,** *52*, 66-70.

253. Wang, X.; French, J.; Kandadai, S.; Chua, H. T., Adsorption Measurements of Methane on Activated Carbon in the Temperature Range (281 to 343) K and Pressures to 1.2 MPa. *J. Chem. Eng. Data* **2010,** *55*, 2700–2706.

254. Loh, W. S.; Rahman, K. A.; Chakraborty, A.; Saha, B. B.; Choo, Y. S.; Khoo, B. C.; Ng, K. C., Improved Isotherm Data for Adsorption of Methane on Activated Carbons. *J. Chem. Eng. Data* **2010,** *55*, 2840–2847.

255. Abdulsalam, J.; Mulopo, J.; Bada, S. O.; Oboirien, B., Equilibria and Isosteric Heat of Adsorption of Methane on Activated Carbons Derived from South African Coal Discards. *ACS Omega* **2020,** *5*, (50), 32530-32539.

256. Rios, R. B.; Silva, F. W. M.; Torres, A. E. B.; Azevedo, D. C. S.; Cavalcante, C. L., Adsorption of methane in activated carbons obtained from coconut shells using H3PO4 chemical activation. *Adsorption* **2009,** *15*, (3), 271-277.

257. Bastos-Neto, M.; Canabrava, D. V.; Torres, A. E. B.; Rodriguez-Castellón, E.; Jiménez-López, A.; Azevedo, D. C. S.; Cavalcante, C. L., Effects of textural and surface characteristics of microporous activated carbons on the methane adsorption capacity at high pressures. *Appl. Surf. Sci.* **2007,** *253*, (13), 5721-5725.

258. Wang, X.; Yuan, B.; Zhou, X.; Xia, Q.; Li, Y.; An, D.; Li, Z., Novel glucose-based adsorbents (Glc-Cs) with high CO 2 capacity and excellent CO 2 /CH 4 /N 2 adsorption selectivity. *Chem. Eng. J.* **2017,** *327*, 51-59.

259. Casco, M. E.; Martínez-Escandell, M.; Gadea-Ramos, E.; Kaneko, K.; Silvestre-Albero, J.; Rodríguez-Reinoso, F., High-Pressure Methane Storage in Porous Materials: Are Carbon Materials in the Pole Position? *Chem. Mater.* **2015,** *27*, (3), 959-964.

260. Feng, Y.-Y.; Yang, W.; Chu, W., K2S-activated carbons developed from coal and their methane adsorption behaviors. *Chinese Physics B* **2014,** *23*, (10).

261. Altwala, A.; Mokaya, R., Predictable and targeted activation of biomass to carbons with high surface area density and enhanced methane storage capacity. *Energy & Environmental Science* **2020,** *13*, (9), 2967-2978.

262. Yuan, B.; Wu, X.; Chen, Y.; Huang, J.; Luo, H.; Deng, S., Adsorption of CO(2), CH(4), and N(2) on ordered mesoporous carbon: approach for greenhouse gases capture and biogas upgrading. *Environ. Sci. Technol.* **2013,** *47*, (10), 5474-80.

263. Sreńscek-Nazzal, J.; Kamińska, W.; Michalkiewicz, B.; Koren, Z. C., Production, characterization and methane storage potential of KOH-activated carbon from sugarcane molasses. *Industrial Crops and Products* **2013,** *47*, 153-159.

264. El-Sharkawy, I. I.; Mansour, M. H.; Awad, M. M.; El-Ashry, R., Investigation of Natural Gas Storage through Activated Carbon. *J. Chem. Eng. Data* **2015,** *60*, (11), 3215-3223.

265. Yeon, S.-H.; Osswald, S.; Gogotsi, Y.; Singer, J. P.; Simmons, J. M.; Fischer, J. E.; Lillo-Ródenas, M. A.; Linares-Solano, Á., Enhanced methane storage of chemically and physically activated carbide-derived carbon. *Journal of Power Sources* **2009,** *191*, (2), 560-567.

266. Rahman, K. A.; Loh, W. S.; Chakraborty, A.; Saha, B. B.; Ng, K. C., Adsorption Thermodynamics of Natural Gas Storage onto Pitch-Based Activated Carbons. In *Proceedings of the 2nd Annual Gas Processing Symposium*, 2010; pp 187-195.

267. Esteves, I. A. A. C.; Lopes, M. S. S.; Nunes, P. M. C.; Mota, J. P. B., Adsorption of natural gas and biogas components on activated carbon. *Sep. Purif. Technol.* **2008,** *62*, (2), 281-296.

268. Wang, Y.; Ercan, C.; Khawajah, A.; Othman, R., Experimental and theoretical study of methane adsorption on granular activated carbons. *AlChE J.* **2012,** *58*, (3), 782-788.

269. Yahia, S. B.; Ouederni, A.; Llewellyn, P., Methane storage on olive stones-based activated carbons under high pressure. *2012 First International Conference on Renewable Energies and Vehicular Technology* **2012**, 379-383.

270. Chen, S.; Gong, H.; Dindoruk, B.; He, J.; Bao, Z., Dense Carbon Nanoflower Pellets for Methane Storage. *ACS Applied Nano Materials* **2020,** *3*, (8), 8278-8285.

271. Ali, A.; Hamed, R.; Mohammad Jaber Darabi, M.; Mahsa, R. F., Comparing the Performance of KOH with NaOH-Activated Anthracites in terms of Methane Storage. *Adsorption Science & Technology* **2013,** *31*, (31), 729-745.

272. Tamnanloo, J.; Fatemi, S.; Golmakani, A., Binary Equilibrium Adsorption Data and Comparison of Zeolites with Activated Carbon for Selective Adsorption of CO2 from CH4. *Adsorption Science & Technology* **2014,** *32*, (9), 707-716.

273. Lee, T.; Tan, W.-C.; Matsumoto, A.; Yeoh, F.-Y., Methane Adsorption Microcalorimetry of Activated Carbon Fibre Synthesized from Empty Fruit Bunch Fibre. *Adsorption Science & Technology* **2015,** *33*, (3), 263-277.

274. Choma, J.; Osuchowski, Ł.; Dziura, A.; Marszewski, M.; Jaroniec, M., Benzene and Methane Adsorption on Ultrahigh Surface Area Carbons Prepared from Sulphonated Styrene Divinylbenzene Resin by KOH Activation. *Adsorption Science & Technology* **2015,** *33*, (6), 587-594.

275. Awadallah-F, A.; Al-Muhtaseb, S. A., Influence of Carbon Uniformity on Its Characteristics and Adsorption Capacities of CO2 and CH4 Gases. *Applied Sciences* **2020,** *11*, (1).

276. Song, X.; Wang, L. a.; Ma, X.; Zeng, Y., Adsorption equilibrium and thermodynamics of CO2 and CH4 on carbon molecular sieves. *Appl. Surf. Sci.* **2017,** *396*, 870-878.

277. Chakraborty, A., Thermodynamic trends for the adsorption of non polar gases on activated carbons employing a new adsorption isotherm modelling. *Appl. Therm. Eng.* **2016,** *105*, 189-197.

278. Zhu, Z. W.; Zheng, Q. R., Methane adsorption on the graphene sheets, activated carbon and carbon black. *Appl. Therm. Eng.* **2016,** *108*, 605-613.

279. Arami-Niya, A.; Rufford, T. E.; Zhu, Z., Activated carbon monoliths with hierarchical pore structure from tar pitch and coal powder for the adsorption of CO2, CH4 and N2. *Carbon* **2016,** *103*, 115-124.

280. Casco, M. E.; Martínez-Escandell, M.; Kaneko, K.; Silvestre-Albero, J.; Rodríguez-Reinoso, F., Very high methane uptake on activated carbons prepared from mesophase pitch: A compromise between microporosity and bulk density. *Carbon* **2015,** *93*, 11-21.

281. Li, Y.; Li, D.; Rao, Y.; Zhao, X.; Wu, M., Superior CO2, CH4, and H2 uptakes over ultrahigh-surface-area carbon spheres prepared from sustainable biomass-derived char by CO2 activation. *Carbon* **2016,** *105*, 454-462.

282. de Oliveira, L. H.; Meneguin, J. G.; Pereira, M. V.; do Nascimento, J. F.; Arroyo, P. A., Adsorption of hydrogen sulfide, carbon dioxide, methane, and their mixtures on activated carbon. *Chem. Eng. Commun.* **2019,** *206*, (11), 1533-1553.

283. Attia, N. F.; Jung, M.; Park, J.; Jang, H.; Lee, K.; Oh, H., Flexible nanoporous activated carbon cloth for achieving high H2, CH4, and CO2 storage capacities and selective CO2/CH4 separation. *Chem. Eng. J.* **2020,** *379*.

284. Tang, R.; Dai, Q.; Liang, W.; Wu, Y.; Zhou, X.; Pan, H.; Li, Z., Synthesis of novel particle rice-based carbon materials and its excellent CH4/N2 adsorption selectivity for methane enrichment from Low-rank natural gas. *Chem. Eng. J.* **2020,** *384*.

285. Banisheykholeslami, F.; Ghoreyshi, A. A.; Mohammadi, M.; Pirzadeh, K., Synthesis of a Carbon Molecular Sieve from Broom Corn Stalk via Carbon Deposition of Methane for the Selective Separation of a CO2/CH4Mixture. *CLEAN - Soil, Air, Water* **2015,** *43*, (7), 1084-1092.

286. Peredo-Mancilla, D.; Ghouma, I.; Hort, C.; Matei Ghimbeu, C.; Jeguirim, M.; Bessieres, D., CO2 and CH4 Adsorption Behavior of Biomass-Based Activated Carbons. *Energies* **2018,** *11*, (11).

287. Li, Y.; Liu, N.; Zhang, T.; Wang, B.; Wang, Y.; Wang, L.; Wei, J., Highly microporous nitrogen-doped carbons from anthracite for effective CO2 capture and CO2/CH4 separation. *Energy* **2020,** *211*.

288. Stelitano, S.; Conte, G.; Policicchio, A.; Aloise, A.; Desiderio, G.; Agostino, R. G., Low Pressure Methane Storage in Pinecone-Derived Activated Carbons. *Energy & Fuels* **2018,** *32*, (10), 10891-10897.

289. Guan, C.; Loo, L. S.; Wang, K.; Yang, C., Methane storage in carbon pellets prepared via a binderless method. *Energy Convers. Manage.* **2011,** *52*, (2), 1258-1262.

290. Gutlein, S.; Burkard, C.; Zeilinger, J.; Niedermaier, M.; Klumpp, M.; Kolb, V.; Jess, A.; Etzold, B. J., A feasible way to remove the heat during adsorptive methane storage. *Environ. Sci. Technol.* **2015,** *49*, (1), 672-8.

291. Luo, J.; Liu, Y.; Sun, W.; Jiang, C.; Xie, H.; Chu, W., Influence of structural parameters on methane adsorption over activated carbon: Evaluation by using D–A model. *Fuel* **2014,** *123*, 241-247.

292. Wu, Y.; Chen, Z.; Liu, Y.; Xu, Y.; Liu, Z., One step synthesis of N-doped activated carbons derived from sustainable microalgae-NaAlg composites for CO2 and CH4 adsorption. *Fuel* **2018,** *233*, 574-581.

293. Álvarez-Gutiérrez, N.; Gil, M. V.; Rubiera, F.; Pevida, C., Adsorption performance indicators for the CO2/CH4 separation: Application to biomass-based activated carbons. *Fuel Process. Technol.* **2016,** *142*, 361-369.

294. Ke, Z.; Xiao, H.; Wen, Y.; Du, S.; Zhou, X.; Xiao, J.; Li, Z., Adsorption Property of Starch-Based Microporous Carbon Materials with High Selectivity and Uptake for C1/C2/C3 Separation. *Industrial & Engineering Chemistry Research* **2021,** *60*, (12), 4668-4676.

295. Yang, W.; Feng, Y.; Chu, W., Comparative Study of Textural Characteristics on Methane Adsorption for Carbon Spheres Produced by CO2Activation. *International Journal of Chemical Engineering* **2014,** *2014*, 1-7.

296. Conte, G.; Stelitano, S.; Policicchio, A.; Minuto, F. D.; Lazzaroli, V.; Galiano, F.; Agostino, R. G., Assessment of activated carbon fibers from commercial Kevlar® as nanostructured material for gas storage: Effect of activation procedure and adsorption of CO2 and CH4. *J. Anal. Appl. Pyrolysis* **2020,** *152*.

297. Lee, J.-W.; Balathanigaimani, M. S.; Kang, H.-C.; Shim, W.-G.; Kim, C.; Moon, H., Methane Storage on Phenol-Based Activated Carbons at (293.15, 303.15, and 313.15) K. *J. Chem. Eng. Data* **2007**.

298. Rahman, K. A.; Loh, W. S.; Yanagi, H.; Chakraborty, A.; Saha, B. B.; Chun, W. G.; Ng, K. C., Experimental Adsorption Isotherm of Methane onto Activated Carbon at Suband Supercritical Temperatures. *J. Chem. Eng. Data* **2010**.

299. Mu, B.; Walton, K. S., High-Pressure Adsorption Equilibrium of CO2, CH4, and CO on an Impregnated Activated Carbon. *J. Chem. Eng. Data* **2011,** *56*, (3), 390-397.

300. Wu, Y.-J.; Yang, Y.; Kong, X.-M.; Li, P.; Yu, J.-G.; Ribeiro, A. M.; Rodrigues, A. E., Adsorption of Pure and Binary CO2, CH4, and N2 Gas Components on Activated Carbon Beads. *J. Chem. Eng. Data* **2015,** *60*, (9), 2684-2693.

301. Yi, H.; Li, Y.; Tang, X.; Li, F.; Li, K.; Yuan, Q.; Sun, X., Effect of the Adsorbent Pore Structure on the Separation of Carbon Dioxide and Methane Gas Mixtures. *J. Chem. Eng. Data* **2015,** *60*, (5), 1388-1395.

302. Contreras, M.; Lagos, G.; Escalona, N.; Soto-Garrido, G.; Radovic, L. R.; Garcia, R., On the methane adsorption capacity of activated carbons: in search of a correlation with adsorbent properties. *Journal of Chemical Technology & Biotechnology* **2009,** *84*, (11), 1736-1741.

303. Mirzaei, S.; Ahmadpour, A.; Shahsavand, A.; Rashidi, H.; Arami-Niya, A., Superior performance of modified pitch-based adsorbents for cyclic methane storage. *Journal of Energy Storage* **2020,** *28*.

304. Tabatabaei Shirazani, M.; Bakhshi, H.; Rashidi, A.; Taghizadeh, M., Starch-based activated carbon micro-spheres for adsorption of methane with superior performance in ANG technology. *Journal of Environmental Chemical Engineering* **2020,** *8*, (4).

305. Hu, X.-M.; Chen, Q.; Zhao, Y.-C.; Laursen, B. W.; Han, B.-H., Straightforward synthesis of a triazine-based porous carbon with high gas-uptake capacities. *Journal of Materials Chemistry A* **2014,** *2*, (34).

306. Yuan, B.; Wang, J.; Chen, Y.; Wu, X.; Luo, H.; Deng, S., Unprecedented performance of N-doped activated hydrothermal carbon towards C2H6/CH4, CO2/CH4, and CO2/H2 separation. *Journal of Materials Chemistry A* **2016,** *4*, (6), 2263-2276.

307. Balathanigaimani, M. S.; Kang, H.-C.; Shim, W.-G.; Kim, C.; Lee, J.-W.; Moon, H., Preparation of powdered activated carbon from rice husk and its methane adsorption properties. *Korean Journal of Chemical Engineering* **2006,** *23*, (4), 663-668.

308. Solara, C.; Lagoc, F. S. R. M.; Vallonea, A.; Deianab, C.; Sapag, K., Natural Gas Storage in Microporous Carbon Obtained from Waste of the Olive Oil Production. *Materials Research Bulletin* **2008,** *11*, (4), 409-414.

309. Antoniou, M. K.; Diamanti, E. K.; Enotiadis, A.; Policicchio, A.; Dimos, K.; Ciuchi, F.; Maccallini, E.; Gournis, D.; Agostino, R. G., Methane storage in zeolite-like carbon materials. *Micropor. Mesopor. Mater.* **2014,** *188*, 16-22.

310. Balathanigaimani, M. S.; Shim, W.-G.; Lee, J.-W.; Moon, H., Adsorption of methane on novel corn grain-based carbon monoliths. *Micropor. Mesopor. Mater.* **2009,** *119*, (1-3), 47-52.

311. Gao, S.; Ge, L.; Rufford, T. E.; Zhu, Z., The preparation of activated carbon discs from tar pitch and coal powder for adsorption of CO 2 , CH 4 and N 2. *Micropor. Mesopor. Mater.* **2017,** *238*, 19-26.

312. Men'shchikov, I.; Shkolin, A.; Khozina, E.; Fomkin, A., Thermodynamics of Adsorbed Methane Storage Systems Based on Peat-Derived Activated Carbons. *Nanomaterials (Basel)* **2020,** *10*, (7).

313. Kemp, K. C.; Baek, S. B.; Lee, W. G.; Meyyappan, M.; Kim, K. S., Activated carbon derived from waste coffee grounds for stable methane storage. *Nanotechnology* **2015,** *26*, (38), 385602.

314. Kiełbasa, K.; Sreńscek-Nazzal, J.; Michalkiewicz, B., Impact of tailored textural properties of activated carbons on methane storage. *Powder Technol.* **2021,** *394*, 336-352.

315. Fomkin, A. A.; Pribylov, A. A.; Tkachev, A. G.; Memetov, N. R.; Melezhik, A. V.; Kucherova, A. E.; Shubin, I. N.; Shkolin, A. V.; Men’shchikov, I. E.; Pulin, A. L.; Zhedulov, S. A., Methane Adsorption in Microporous Carbon Adsorbent with a Bimodal Pore Size Distribution. *Protection of Metals and Physical Chemistry of Surfaces* **2020,** *56*, (1), 1-5.

316. Shevchenko, A. O.; Pribylov, A. A.; Zhedulov, S. A.; Men’shchikov, I. E.; Shkolin, A. V.; Fomkin, A. A., Methane Adsorption in Microporous Carbon Adsorbent LCN Obtained by Thermochemical Synthesis from Lignocellulose. *Protection of Metals and Physical Chemistry of Surfaces* **2019,** *55*, (2), 211-216.

317. Wang, W.; Yuan, D., Mesoporous carbon originated from non-permanent porous MOFs for gas storage and CO2/CH4 separation. *Sci Rep* **2014,** *4*, 5711.

318. Prasetyo, I.; Mukti, N. I. F.; Cahyono, R. B.; Prasetya, A.; Ariyanto, T., Nanoporous Carbon Prepared from Palm Kernel Shell for CO2/CH4 Separation. *Waste and Biomass Valorization* **2020,** *11*, (10), 5599-5606.

319. Yang, Z.; Ju, X.; Liao, H.; Meng, Z.; Ning, H.; Li, Y.; Chen, Z.; Long, J., Preparation of Activated Carbon Doped with Graphene Oxide Porous Materials and Their High Gas Adsorption Performance. *ACS Omega* **2021,** *6*, (30), 19799-19810.

320. Chen, F.; Zhang, Z.; Yang, Q.; Yang, Y.; Bao, Z.; Ren, Q., Microporous Carbon Adsorbents Prepared by Activating Reagent-Free Pyrolysis for Upgrading Low-Quality Natural Gas. *ACS Sustainable Chemistry & Engineering* **2019,** *8*, (2), 977-985.

321. Ma, X.; Chen, R.; Zhou, K.; Wu, Q.; Li, H.; Zeng, Z.; Li, L., Activated Porous Carbon with an Ultrahigh Surface Area Derived from Waste Biomass for Acetone Adsorption, CO2 Capture, and Light Hydrocarbon Separation. *ACS Sustainable Chemistry & Engineering* **2020,** *8*, (31), 11721-11728.

322. Men’shchikov, I. E.; Shkolin, A. V.; Fomkin, A. A.; Khozina, E. V., Thermodynamics of methane adsorption on carbon adsorbent prepared from mineral coal. *Adsorption* **2021**.

323. Song, X.; Wang, L. a.; Zeng, Y.; Zhan, X.; Gong, J.; Li, T., Application of activated carbon modified by acetic acid in adsorption and separation of CO2 and CH4. In *Advances in Energy Science and Environment Engineering II*, 2018.

324. Dong, Z.; Li, B.; Shang, H.; Zhang, P.; Chen, S.; Yang, J.; Zeng, Z.; Wang, J.; Deng, S., Ultramicroporous carbon granules with narrow pore size distribution for efficient CH

4

separation from coal‐bed gases. *AlChE J.* **2021,** *67*, (9).

325. Du, S.; Wu, Y.; Wang, X.; Xia, Q.; Xiao, J.; Zhou, X.; Li, Z., Facile synthesis of ultramicroporous carbon adsorbents with ultra‐high

CH

4

uptake by in situ ionic activation. *AlChE J.* **2020,** *66*, (7).

326. Hao, S. X.; Yu, Z. X.; Liu, X. Y., Surface Modification of Activated Carbon and its Effects on Methane Adsorption. *Applied Mechanics and Materials* **2013,** *395-396*, 605-609.

327. Mirzaei, S.; Ahmadpour, A.; Shahsavand, A.; Nakhaei Pour, A.; LotfiKatooli, L.; Garmroodi Asil, A.; Pouladi, B.; Arami-Niya, A., Experimental and simulation study of the effect of surface functional groups decoration on CH4 and H2 storage capacity of microporous carbons. *Appl. Surf. Sci.* **2020,** *533*.

328. Choi, S.; Alkhabbaz, M. A.; Wang, Y.; Othman, R. M.; Choi, M., Unique thermal contraction of zeolite-templated carbons enabling micropore size tailoring and its effects on methane storage. *Carbon* **2019,** *141*, 143-153.

329. Xu, Y.; Qian, Q.; Chen, X.; Xiao, L.; Wu, D.; Luo, Y.; Chen, Q., Carbon molecular sieves from soybean straw-based activated carbon for CO2/CH4 separation. *Carbon Letters* **2018,** *25*, 68-77.

330. Ashourirad, B.; Sekizkardes, A. K.; Altarawneh, S.; El-Kaderi, H. M., Exceptional Gas Adsorption Properties by Nitrogen-Doped Porous Carbons Derived from Benzimidazole-Linked Polymers. *Chem. Mater.* **2015,** *27*, (4), 1349-1358.

331. Abdeljaoued, A.; Querejeta, N.; Durán, I.; Álvarez-Gutiérrez, N.; Pevida, C.; Chahbani, M., Preparation and Evaluation of a Coconut Shell-Based Activated Carbon for CO2/CH4 Separation. *Energies* **2018,** *11*, (7).

332. Park, J.; Attia, N. F.; Jung, M.; Lee, M. E.; Lee, K.; Chung, J.; Oh, H., Sustainable nanoporous carbon for CO2, CH4, N2, H2 adsorption and CO2/CH4 and CO2/N2 separation. *Energy* **2018,** *158*, 9-16.

333. Álvarez-Gutiérrez, N.; García, S.; Gil, M. V.; Rubiera, F.; Pevida, C., Dynamic Performance of Biomass-Based Carbons for CO2/CH4 Separation. Approximation to a Pressure Swing Adsorption Process for Biogas Upgrading. *Energy & Fuels* **2016,** *30*, (6), 5005-5015.

334. Machnikowski, J.; Kierzek, K.; Lis, K.; Machnikowska, H.; Czepirski, L., Tailoring Porosity Development in Monolithic Adsorbents Made of KOH-Activated Pitch Coke and Furfuryl Alcohol Binder for Methane Storage. *Energy & Fuels* **2010,** *24*, (6), 3410-3414.

335. Ghalandari, V.; Hashemipour, H.; Bagheri, H., Experimental and modeling investigation of adsorption equilibrium of CH4, CO2, and N2 on activated carbon and prediction of multi-component adsorption equilibrium. *Fluid Phase Equilibria* **2020,** *508*.

336. Navarro Quirant, P.; Cuadrado-Collados, C.; Romero-Anaya, A. J.; Silvestre Albero, J.; Martinez Escandell, M., Preparation of Porous Carbons from Petroleum Pitch and Polyaniline by Thermal Treatment for Methane Storage. *Industrial & Engineering Chemistry Research* **2020,** *59*, (13), 5775-5785.

337. Attia, N. F.; Jung, M.; Park, J.; Cho, S.-Y.; Oh, H., Facile synthesis of hybrid porous composites and its porous carbon for enhanced H2 and CH4 storage. *Int. J. Hydrogen Energy* **2020,** *45*, (57), 32797-32807.

338. Pan, H.; Yi, Y.; Lin, Q.; Xiang, G.; Zhang, Y.; Liu, F., Effect of Surface Chemistry and Textural Properties of Activated Carbons for CH4 Selective Adsorption through Low-Concentration Coal Bed Methane. *J. Chem. Eng. Data* **2016,** *61*, (6), 2120-2127.

339. Peredo-Mancilla, D.; Hort, C.; Jeguirim, M.; Ghimbeu, C. M.; Limousy, L.; Bessieres, D., Experimental Determination of the CH4 and CO2 Pure Gas Adsorption Isotherms on Different Activated Carbons. *J. Chem. Eng. Data* **2018,** *63*, (8), 3027-3034.

340. Park, J.; Jung, M.; Jang, H.; Lee, K.; Attia, N. F.; Oh, H., A facile synthesis tool of nanoporous carbon for promising H2, CO2, and CH4 sorption capacity and selective gas separation. *Journal of Materials Chemistry A* **2018,** *6*, (45), 23087-23100.

341. Whittaker, P. B.; Wang, X.; Zimmermann, W.; Regenauer-Lieb, K.; Chua, H. T., Predicting the Integral Heat of Adsorption for Gas Physisorption on Microporous and Mesoporous Adsorbents. *The Journal of Physical Chemistry C* **2014,** *118*, (16), 8350-8358.

342. Giraldo, L.; Rodriguez-Estupiñan, P.; Moreno-Piraján, J. C., A microcalorimetric study of methane adsorption on activated carbons obtained from mangosteen peel at different conditions. *Journal of Thermal Analysis and Calorimetry* **2018,** *132*, (1), 525-541.

343. Song, X.; Wang, L.; Gong, J.; Zhan, X.; Zeng, Y., Exploring a New Method to Study the Effects of Surface Functional Groups on Adsorption of CO2 and CH4 on Activated Carbons. *Langmuir* **2020,** *36*, (14), 3862-3870.

344. Li, Y.; Wang, S.; Wang, B.; Wang, Y.; Wei, J., Sustainable Biomass Glucose-Derived Porous Carbon Spheres with High Nitrogen Doping: As a Promising Adsorbent for CO2/CH4/N2 Adsorptive Separation. *Nanomaterials (Basel)* **2020,** *10*, (1).

345. Men'shchikov, I. E.; Shkolin, A. V.; Strizhenov, E. M.; Khozina, E. V.; Chugaev, S. S.; Shiryaev, A. A.; Fomkin, A. A.; Zherdev, A. A., Thermodynamic Behaviors of Adsorbed Methane Storage Systems Based on Nanoporous Carbon Adsorbents Prepared from Coconut Shells. *Nanomaterials (Basel)* **2020,** *10*, (11).

346. Feng, Y.; Yang, W.; Chu, W.; Jiang, C., Powdered Multi-Walled Carbon Nanotubes Synthetized from Various Activated Carbon-Supported Catalysts and Their Methane Storage Performance. *Nanoscience and Nanotechnology Letters* **2014,** *6*, (10), 875-880.

347. Zheng, Y.; Li, Q.; Yuan, C.; Tao, Q.; Zhao, Y.; Zhang, G.; Liu, J., Influence of temperature on adsorption selectivity: Coal-based activated carbon for CH4 enrichment from coal mine methane. *Powder Technol.* **2019,** *347*, 42-49.

348. Jung, M.; Park, J.; Cho, S. Y.; Elashery, S. E. A.; Attia, N. F.; Oh, H., Flexible carbon sieve based on nanoporous carbon cloth for efficient CO2/CH4 separation. *Surfaces and Interfaces* **2021,** *23*.

349. Cai, J.; Li, L.; Lv, X.; Yang, C.; Zhao, X., Large surface area ordered porous carbons via nanocasting zeolite 10X and high performance for hydrogen storage application. *ACS Appl Mater Interfaces* **2014,** *6*, (1), 167-75.

350. Contescu, C. I.; van Benthem, K.; Li, S.; Bonifacio, C. S.; Pennycook, S. J.; Jena, P.; Gallego, N. C., Single Pd atoms in activated carbon fibers and their contribution to hydrogen storage. *Carbon* **2011,** *49*, (12), 4050-4058.

351. Wang, L.; Yang, F. H.; Yang, R. T., Hydrogen storage properties of B- and N-doped microporous carbon. *AlChE J.* **2009,** *55*, (7), 1823-1833.

352. Fierro, V.; Szczurek, A.; Zlotea, C.; Marêché, J. F.; Izquierdo, M. T.; Albiniak, A.; Latroche, M.; Furdin, G.; Celzard, A., Experimental evidence of an upper limit for hydrogen storage at 77K on activated carbons. *Carbon* **2010,** *48*, (7), 1902-1911.

353. Jordá-Beneyto, M.; Suárez-García, F.; Lozano-Castelló, D.; Cazorla-Amorós, D.; Linares-Solano, A., Hydrogen storage on chemically activated carbons and carbon nanomaterials at high pressures. *Carbon* **2007,** *45*, (2), 293-303.

354. Kang, K. Y.; Lee, B. I.; Lee, J. S., Hydrogen adsorption on nitrogen-doped carbon xerogels. *Carbon* **2009,** *47*, (4), 1171-1180.

355. Sethia, G.; Sayari, A., Activated carbon with optimum pore size distribution for hydrogen storage. *Carbon* **2016,** *99*, 289-294.

356. Wang, H.; Gao, Q.; Hu, J.; Chen, Z., High performance of nanoporous carbon in cryogenic hydrogen storage and electrochemical capacitance. *Carbon* **2009,** *47*, (9), 2259-2268.

357. Wang, J.; Senkovska, I.; Kaskel, S.; Liu, Q., Chemically activated fungi-based porous carbons for hydrogen storage. *Carbon* **2014,** *75*, 372-380.

358. Xia, K.; Gao, Q.; Wu, C.; Song, S.; Ruan, M., Activation, characterization and hydrogen storage properties of the mesoporous carbon CMK-3. *Carbon* **2007,** *45*, (10), 1989-1996.

359. Xia, Y.; Mokaya, R.; Grant, D. M.; Walker, G. S., A simplified synthesis of N-doped zeolite-templated carbons, the control of the level of zeolite-like ordering and its effect on hydrogen storage properties. *Carbon* **2011,** *49*, (3), 844-853.

360. Xia, Y.; Zhu, Y.; Tang, Y., Preparation of sulfur-doped microporous carbons for the storage of hydrogen and carbon dioxide. *Carbon* **2012,** *50*, (15), 5543-5553.

361. Lee, Y. S.; Kim, Y. H.; Hong, J. S.; Suh, J. K.; Cho, G. J., The adsorption properties of surface modified activated carbon fibers for hydrogen storages. *Catalysis Today* **2007,** *120*, (3-4), 420-425.

362. Blankenship, L. S.; Mokaya, R., Cigarette butt-derived carbons have ultra-high surface area and unprecedented hydrogen storage capacity. *Energy & Environmental Science* **2017,** *10*, (12), 2552-2562.

363. Sevilla, M.; Fuertes, A. B.; Mokaya, R., High density hydrogen storage in superactivated carbons from hydrothermally carbonized renewable organic materials. *Energy & Environmental Science* **2011,** *4*, (4).

364. Sevilla, M.; Foulston, R.; Mokaya, R., Superactivated carbide-derived carbons with high hydrogenstorage capacity. *Energy Environ. Sci.* **2010,** *3*, (2), 223-227.

365. Chen, H.; Wang, H.; Xue, Z.; Yang, L.; Xiao, Y.; Zheng, M.; Lei, B.; Liu, Y.; Sun, L., High hydrogen storage capacity of rice hull based porous carbon. *Int. J. Hydrogen Energy* **2012,** *37*, (24), 18888-18894.

366. Dibandjo, P.; Zlotea, C.; Gadiou, R.; Matei Ghimbeu, C.; Cuevas, F.; Latroche, M.; Leroy, E.; Vix-Guterl, C., Hydrogen storage in hybrid nanostructured carbon/palladium materials: Influence of particle size and surface chemistry. *Int. J. Hydrogen Energy* **2013,** *38*, (2), 952-965.

367. Huang, C.-C.; Li, Y.-H.; Wang, Y.-W.; Chen, C.-H., Hydrogen storage in cobalt-embedded ordered mesoporous carbon. *Int. J. Hydrogen Energy* **2013,** *38*, (10), 3994-4002.

368. Huang, J.; Liang, Y.; Dong, H.; Hu, H.; Yu, P.; Peng, L.; Zheng, M.; Xiao, Y.; Liu, Y., Revealing contribution of pore size to high hydrogen storage capacity. *Int. J. Hydrogen Energy* **2018,** *43*, (39), 18077-18082.

369. Jiang, J.; Gao, Q.; Zheng, Z.; Xia, K.; Hu, J., Enhanced room temperature hydrogen storage capacity of hollow nitrogen-containing carbon spheres. *Int. J. Hydrogen Energy* **2010,** *35*, (1), 210-216.

370. Kunowsky, M.; Marco-Lozar, J. P.; Cazorla-Amorós, D.; Linares-Solano, A., Scale-up activation of carbon fibres for hydrogen storage. *Int. J. Hydrogen Energy* **2010,** *35*, (6), 2393-2402.

371. Musyoka, N. M.; Ren, J.; Langmi, H. W.; North, B. C.; Mathe, M., A comparison of hydrogen storage capacity of commercial and fly ash-derived zeolite X together with their respective templated carbon derivatives. *Int. J. Hydrogen Energy* **2015,** *40*, (37), 12705-12712.

372. Sevilla, M.; Fuertes, A. B.; Mokaya, R., Preparation and hydrogen storage capacity of highly porous activated carbon materials derived from polythiophene. *Int. J. Hydrogen Energy* **2011,** *36*, (24), 15658-15663.

373. Tian, H. Y.; Buckley, C. E.; Sheppard, D. A.; Paskevicius, M.; Hanna, N., A synthesis method for cobalt doped carbon aerogels with high surface area and their hydrogen storage properties. *Int. J. Hydrogen Energy* **2010,** *35*, (24), 13242-13246.

374. Xia, K.; Gao, Q.; Song, S.; Wu, C.; Jiang, J.; Hu, J.; Gao, L., CO2 activation of ordered porous carbon CMK-1 for hydrogen storage. *Int. J. Hydrogen Energy* **2008,** *33*, (1), 116-123.

375. Xu, W.; Takahashi, K.; Matsuo, Y.; Hattori, Y.; Kumagai, M.; Ishiyama, S.; Kaneko, K.; Iijima, S., Investigation of hydrogen storage capacity of various carbon materials. *Int. J. Hydrogen Energy* **2007,** *32*, (13), 2504-2512.

376. Zhang, C.; Geng, Z.; Cai, M.; Zhang, J.; Liu, X.; Xin, H.; Ma, J., Microstructure regulation of super activated carbon from biomass source corncob with enhanced hydrogen uptake. *Int. J. Hydrogen Energy* **2013,** *38*, (22), 9243-9250.

377. Zhao, W.; Fierro, V.; Zlotea, C.; Aylon, E.; Izquierdo, M. T.; Latroche, M.; Celzard, A., Optimization of activated carbons for hydrogen storage. *Int. J. Hydrogen Energy* **2011,** *36*, (18), 11746-11751.

378. Hydrogen Storage in Activated Carbons and Activated Carbon Fibers. *J. Phys. Chem. B* **2002**.

379. Preparation of Nanoporous Carbon Particles and Their Cryogenic Hydrogen Storage Capacities. *J. Phys. Chem. C* **2008**.

380. Enhancement of Hydrogen Storage Capacity of Zeolite-Templated Carbons by Chemical Activation. *J. Phys. Chem. C* **2010**.

381. Minoda, A.; Oshima, S.; Iki, H.; Akiba, E., Synthesis of KOH-activated porous carbon materials and study of hydrogen adsorption. *J. Alloys Compd.* **2013,** *580*, S301-S304.

382. Geng, Z.; Zhang, C.; Wang, D.; Zhou, X.; Cai, M., Pore size effects of nanoporous carbons with ultra-high surface area on high-pressure hydrogen storage. *Journal of Energy Chemistry* **2015,** *24*, (1), 1-8.

383. Masika, E.; Mokaya, R., Hydrogen Storage in High Surface Area Carbons with Identical Surface Areas but Different Pore Sizes: Direct Demonstration of the Effects of Pore Size. *The Journal of Physical Chemistry C* **2012,** *116*, (49), 25734-25740.

384. Gao, F.; Zhao, D.-L.; Li, Y.; Li, X.-G., Preparation and hydrogen storage of activated rayon-based carbon fibers with high specific surface area. *J. Phys. Chem. Solids* **2010,** *71*, (4), 444-447.

385. Bader, N.; Zacharia, R.; Abdelmottaleb, O.; Cossement, D., How the activation process modifies the hydrogen storage behavior of biomass-derived activated carbons. *J. Porous Mater.* **2017,** *25*, (1), 221-234.

386. Enhanced Hydrogen Storage Capacity of High Surface Area Zeolite-like Carbon Materials. *Journal of the American Chemical Society* **2007**.

387. High Hydrogen Storage Capacity of Porous Carbons Prepared by Using Activated Carbon. *Journal of the American Chemical Society* **2009**.

388. Üner, O., Hydrogen storage capacity and methylene blue adsorption performance of activated carbon produced from Arundo donax. *Mater. Chem. Phys.* **2019,** *237*.

389. Jordá-Beneyto, M.; Lozano-Castelló, D.; Suárez-García, F.; Cazorla-Amorós, D.; Linares-Solano, Á., Advanced activated carbon monoliths and activated carbons for hydrogen storage. *Micropor. Mesopor. Mater.* **2008,** *112*, (1-3), 235-242.

390. Liu, X.; Zhang, C.; Geng, Z.; Cai, M., High-pressure hydrogen storage and optimizing fabrication of corncob-derived activated carbon. *Micropor. Mesopor. Mater.* **2014,** *194*, 60-65.

391. Robertson, C.; Mokaya, R., Microporous activated carbon aerogels via a simple subcritical drying route for CO2 capture and hydrogen storage. *Micropor. Mesopor. Mater.* **2013,** *179*, 151-156.

392. Yang, Y.-X.; Bourgeois, L.; Zhao, C.; Zhao, D.; Chaffee, A.; Webley, P. A., Ordered micro-porous carbon molecular sieves containing well-dispersed platinum nanoparticles for hydrogen storage. *Micropor. Mesopor. Mater.* **2009,** *119*, (1-3), 39-46.

393. Meisner, G. P.; Hu, Q., High surface area microporous carbon materials for cryogenic hydrogen storage synthesized using new template-based and activation-based approaches. *Nanotechnology* **2009,** *20*, (20), 204023.

394. Zhao, J.; Wei, J.; Cai, D.; Cao, H.; Tan, T., Polyaspartic Acid-Derived Micro-/Mesoporous Carbon for Ultrahigh H2 and CH4 Adsorption. *ACS Omega* **2020,** *5*, (19), 10687-10695.

395. Sevilla, M.; Sangchoom, W.; Balahmar, N.; Fuertes, A. B.; Mokaya, R., Highly Porous Renewable Carbons for Enhanced Storage of Energy-Related Gases (H2 and CO2) at High Pressures. *ACS Sustainable Chemistry & Engineering* **2016,** *4*, (9), 4710-4716.

396. Giasafaki, D.; Charalambopoulou, G.; Bourlinos, A.; Stubos, A.; Gournis, D.; Steriotis, T., A hydrogen sorption study on a Pd-doped CMK-3 type ordered mesoporous carbon. *Adsorption* **2013,** *19*, (2-4), 803-811.

397. Zhao, W.; Luo, L.; Wang, H.; Fan, M., Synthesis of Bamboo-Based Activated Carbons with Super-High Specific Surface Area for Hydrogen Storage. *Bioresources* **2017**.

398. Kunowsky, M.; Marco-Lozar, J. P.; Oya, A.; Linares-Solano, A., Hydrogen storage in CO2-activated amorphous nanofibers and their monoliths. *Carbon* **2012,** *50*, (3), 1407-1416.

399. Yang, Y.; Brown, C. M.; Zhao, C.; Chaffee, A. L.; Nick, B.; Zhao, D.; Webley, P. A.; Schalch, J.; Simmons, J. M.; Liu, Y.; Her, J.-H.; Buckley, C. E.; Sheppard, D. A., Micro-channel development and hydrogen adsorption properties in templated microporous carbons containing platinum nanoparticles. *Carbon* **2011,** *49*, (4), 1305-1317.

400. Zhang, C.; Kong, R.; Wang, X.; Xu, Y.; Wang, F.; Ren, W.; Wang, Y.; Su, F.; Jiang, J.-X., Porous carbons derived from hypercrosslinked porous polymers for gas adsorption and energy storage. *Carbon* **2017,** *114*, 608-618.

401. Zubizarreta, L.; Menéndez, J. A.; Job, N.; Marco-Lozar, J. P.; Pirard, J. P.; Pis, J. J.; Linares-Solano, A.; Cazorla-Amorós, D.; Arenillas, A., Ni-doped carbon xerogels for H2 storage. *Carbon* **2010,** *48*, (10), 2722-2733.

402. Choi, Y.-K.; Park, S.-J., Hydrogen storage capacity of highly porous carbons synthesized from biomass-derived aerogels. *Carbon letters* **2015,** *16*, (2), 127-131.

403. Balathanigaimani, M. S.; Shim, W.-G.; Kim, T.-H.; Cho, S.-J.; Lee, J.-W.; Moon, H., Hydrogen storage on highly porous novel corn grain-based carbon monoliths. *Catalysis Today* **2009,** *146*, (1-2), 234-240.

404. Kostoglou, N.; Koczwara, C.; Stock, S.; Tampaxis, C.; Charalambopoulou, G.; Steriotis, T.; Paris, O.; Rebholz, C.; Mitterer, C., Nanoporous polymer-derived activated carbon for hydrogen adsorption and electrochemical energy storage. *Chem. Eng. J.* **2022,** *427*.

405. Sun, Y.; Webley, P. A., Preparation of activated carbons from corncob with large specific surface area by a variety of chemical activators and their application in gas storage. *Chem. Eng. J.* **2010,** *162*, (3), 883-892.

406. Yang, S. J.; Kim, T.; Im, J. H.; Kim, Y. S.; Lee, K.; Jung, H.; Park, C. R., MOF-Derived Hierarchically Porous Carbon with Exceptional Porosity and Hydrogen Storage Capacity. *Chem. Mater.* **2012,** *24*, (3), 464-470.

407. Peng, Z.; Xu, Y.; Luo, W.; Wang, C.; Ma, L., Conversion of Biomass Wastes into Activated Carbons by Chemical Activation for Hydrogen Storage. *ChemistrySelect* **2020,** *5*, (36), 11221-11228.

408. Chen, T.; Zhou, Y.; Luo, L.; Wu, X.; Li, Z.; Fan, M.; Zhao, W., Preparation and characterization of heteroatom self-doped activated biocarbons as hydrogen storage and supercapacitor electrode materials. *Electrochim. Acta* **2019,** *325*.

409. Alam, N.; Mokaya, R., Evolution of optimal porosity for improved hydrogen storage in templated zeolite-like carbons. *Energy & Environmental Science* **2010,** *3*, (11).

410. Masika, E.; Mokaya, R., Exceptional gravimetric and volumetric hydrogen storage for densified zeolite templated carbons with high mechanical stability. *Energy & Environmental Science* **2014,** *7*, (1), 427-434.

411. Sevilla, M.; Mokaya, R.; Fuertes, A. B., Ultrahigh surface area polypyrrole-based carbons with superior performance for hydrogen storage. *Energy & Environmental Science* **2011,** *4*, (8).

412. Bicil, Z.; Doğan, M., Characterization of Activated Carbons Prepared from Almond Shells and Their Hydrogen Storage Properties. *Energy & Fuels* **2021,** *35*, (12), 10227-10240.

413. Mishra, R.; Prasad, P. R.; Panda, P.; Barman, S., Highly Porous Activated N-Doped Carbon as an Ideal Electrode Material for Capacitive Energy Storage and Physisorption of H2, CO2, and CH4. *Energy & Fuels* **2021,** *35*, (17), 14177-14187.

414. Wei, J.; Zhao, J.; Cai, D.; Ren, W.; Cao, H.; Tan, T., Synthesis of micro/meso porous carbon for ultrahigh hydrogen adsorption using cross-linked polyaspartic acid. *Frontiers of Chemical Science and Engineering* **2020,** *14*, (5), 857-867.

415. Ariharan, A.; Viswanathan, B.; Nandhakumar, V., Nitrogen-incorporated carbon nanotube derived from polystyrene and polypyrrole as hydrogen storage material. *Int. J. Hydrogen Energy* **2018,** *43*, (10), 5077-5088.

416. Armandi, M.; Bonelli, B.; Cho, K.; Ryoo, R.; Garrone, E., Study of hydrogen physisorption on nanoporous carbon materials of different origin. *Int. J. Hydrogen Energy* **2011,** *36*, (13), 7937-7943.

417. Hu, W.; Li, Y.; Zheng, M.; Xiao, Y.; Dong, H.; Liang, Y.; Hu, H.; Liu, Y., Degradation of biomass components to prepare porous carbon for exceptional hydrogen storage capacity. *Int. J. Hydrogen Energy* **2021,** *46*, (7), 5418-5426.

418. Li, K.; Tao, S.; Li, J.; Wang, X., Controllable Fe introduction into ordered mesoporous carbon with interconnected small pores for investigating Fe doping effect on hydrogen adsorption. *Int. J. Hydrogen Energy* **2017,** *42*, (8), 4733-4740.

419. Pedicini, R.; Maisano, S.; Chiodo, V.; Conte, G.; Policicchio, A.; Agostino, R. G., Posidonia Oceanica and Wood chips activated carbon as interesting materials for hydrogen storage. *Int. J. Hydrogen Energy* **2020,** *45*, (27), 14038-14047.

420. Suarez-Garcia, F.; Vilaplana-Ortego, E.; Kunowsky, M.; Kimura, M.; Oya, A.; Linares-Solano, A., Activation of polymer blend carbon nanofibres by alkaline hydroxides and their hydrogen storage performances. *Int. J. Hydrogen Energy* **2009,** *34*, (22), 9141-9150.

421. Wang, Z.; Sun, L.; Xu, F.; Zhou, H.; Peng, X.; Sun, D.; Wang, J.; Du, Y., Nitrogen-doped porous carbons with high performance for hydrogen storage. *Int. J. Hydrogen Energy* **2016,** *41*, (20), 8489-8497.

422. Wróbel-Iwaniec, I.; Díez, N.; Gryglewicz, G., Chitosan-based highly activated carbons for hydrogen storage. *Int. J. Hydrogen Energy* **2015,** *40*, (17), 5788-5796.

423. Xiao, Y.; Dong, H.; Long, C.; Zheng, M.; Lei, B.; Zhang, H.; Liu, Y., Melaleuca bark based porous carbons for hydrogen storage. *Int. J. Hydrogen Energy* **2014,** *39*, (22), 11661-11667.

424. Zhao, W.; Fierro, V.; Fernández-Huerta, N.; Izquierdo, M. T.; Celzard, A., Hydrogen uptake of high surface area-activated carbons doped with nitrogen. *Int. J. Hydrogen Energy* **2013,** *38*, (25), 10453-10460.

425. W, Z.; L, L.; T, C.; Z, L.; Z, Z.; M, F., Activated carbons from oil palm shell for hydrogen storage. *IOP Conference Series: Materials Science and Engineering* **2018**.

426. Lee, S. Y.; Park, S. J., Synthesis of zeolite-casted microporous carbons and their hydrogen storage capacity. *J. Colloid Interface Sci.* **2012,** *384*, (1), 116-20.

427. Wang, H.; Gao, Q.; Hu, J., High Hydrogen Storage Capacity of Porous Carbons Prepared by Using Activated Carbon. *J. Am. Chem. Soc.* **2009**.

428. Almasoudi, A.; Mokaya, R., Preparation and hydrogen storage capacity of templated and activated carbons nanocast from commercially available zeolitic imidazolate framework. *J. Mater. Chem.* **2012,** *22*, (1), 146-152.

429. Yang, Z.; Xia, Y.; Sun, X.; Mokaya, R., Preparation and Hydrogen Storage Properties of Zeolite-Templated Carbon Materials Nanocast via Chemical Vapor Deposition: Effect of the Zeolite Template and Nitrogen Doping. *J. Phys. Chem. B* **2006**.

430. Sevilla, M.; Alam, N.; Mokaya, R., Enhancement of Hydrogen Storage Capacity of Zeolite-Templated Carbons by Chemical Activation. *J. Phys. Chem. C* **2010**.

431. Bader, N.; Ouederni, A., Optimization of biomass-based carbon materials for hydrogen storage. *Journal of Energy Storage* **2016,** *5*, 77-84.

432. Choi, Y.-K.; Park, S.-J., Preparation and characterization of sucrose-based microporous carbons for increasing hydrogen storage. *Journal of Industrial and Engineering Chemistry* **2015,** *28*, 32-36.

433. Heo, Y.-J.; Park, S.-J., Synthesis of activated carbon derived from rice husks for improving hydrogen storage capacity. *Journal of Industrial and Engineering Chemistry* **2015,** *31*, 330-334.

434. You, Y.-W.; Moon, E.-H.; Heo, I.; Park, H.; Hong, J.-S.; Suh, J.-K., Preparation and characterization of porous carbons from ion-exchange resins with different degree of cross-linking for hydrogen storage. *Journal of Industrial and Engineering Chemistry* **2017,** *45*, 164-170.

435. Wang, J.; Oschatz, M.; Biemelt, T.; Borchardt, L.; Senkovska, I.; Lohe, M. R.; Kaskel, S., Synthesis, characterization, and hydrogen storage capacities of hierarchical porous carbide derived carbon monolith. *Journal of Materials Chemistry* **2012,** *22*, (45).

436. Almasoudi, A.; Mokaya, R., Porosity modulation of activated ZIF-templated carbons via compaction for hydrogen and CO2 storage applications. *Journal of Materials Chemistry A* **2014,** *2*, (28).

437. Balahmar, N.; Mokaya, R., Pre-mixed precursors for modulating the porosity of carbons for enhanced hydrogen storage: towards predicting the activation behaviour of carbonaceous matter. *Journal of Materials Chemistry A* **2019,** *7*, (29), 17466-17479.

438. Roberts, A. D.; Lee, J.-S. M.; Wong, S. Y.; Li, X.; Zhang, H., Nitrogen-rich activated carbon monoliths via ice-templating with high CO2 and H2 adsorption capacities. *Journal of Materials Chemistry A* **2017,** *5*, (6), 2811-2820.

439. Liu, Y.; Li, D.; Lin, B.; Sun, Y.; Zhang, X.; Yang, H., Hydrothermal synthesis of Ni-doped hierarchically porous carbon monoliths for hydrogen storage. *J. Porous Mater.* **2015,** *22*, (6), 1417-1422.

440. Melouki, R.; Llewellyn, P. L.; Tazibet, S.; Boucheffa, Y., Hydrogen adsorption on activated carbons prepared from olive waste: effect of activation conditions on uptakes and adsorption energies. *J. Porous Mater.* **2016,** *24*, (1), 1-11.

441. Lee, S.-Y.; Park, S.-J., Preparation and characterization of ordered porous carbons for increasing hydrogen storage behaviors. *J. Solid State Chem.* **2011,** *184*, (10), 2655-2660.

442. Yang, Z.; Xia, Y.; Zhu, Y., Preparation and gases storage capacities of N-doped porous activated carbon materials derived from mesoporous polymer. *Mater. Chem. Phys.* **2013,** *141*, (1), 318-323.

443. Rambau, K. M.; Musyoka, N. M.; Manyala, N.; Ren, J.; Langmi, H. W., Mechanochemical approach in the synthesis of activated carbons from waste tyres and its hydrogen storage applications. *Materials Today: Proceedings* **2018,** *5*, (4), 10505-10513.

444. Alam, N.; Mokaya, R., The effect of Al content of zeolite template on the properties and hydrogen storage capacity of zeolite templated carbons. *Micropor. Mesopor. Mater.* **2011,** *144*, (1-3), 140-147.

445. Guan, C.; Wang, K.; Yang, C.; Zhao, X. S., Characterization of a zeolite-templated carbon for H2 storage application. *Micropor. Mesopor. Mater.* **2009,** *118*, (1-3), 503-507.

446. Yang, R.; Liu, G.; Li, M.; Zhang, J.; Hao, X., Preparation and N2, CO2 and H2 adsorption of super activated carbon derived from biomass source hemp (Cannabis sativa L.) stem. *Micropor. Mesopor. Mater.* **2012,** *158*, 108-116.

447. Adeniran, B.; Mokaya, R., Compactivation: A mechanochemical approach to carbons with superior porosity and exceptional performance for hydrogen and CO2 storage. *Nano Energy* **2015,** *16*, 173-185.

448. Blankenship Ii, T. S.; Balahmar, N.; Mokaya, R., Oxygen-rich microporous carbons with exceptional hydrogen storage capacity. *Nat Commun* **2017,** *8*, (1), 1545.

449. Masika, E.; Mokaya, R., Preparation of ultrahigh surface area porous carbons templated using zeolite 13X for enhanced hydrogen storage. *Progress in Natural Science: Materials International* **2013,** *23*, (3), 308-316.

450. Choma, J.; Osuchowski, Ł.; Marszewski, M.; Jaroniec, M., Highly microporous polymer-based carbons for CO2 and H2 adsorption. *RSC Advances* **2014,** *4*, (28).

451. Musyoka, N. M.; Mutuma, B. K.; Manyala, N., Onion-derived activated carbons with enhanced surface area for improved hydrogen storage and electrochemical energy application. *RSC Advances* **2020,** *10*, (45), 26928-26936.

452. Wu, X.; Tian, Z.; Hu, L.; Huang, S.; Cai, J., Macroalgae-derived nitrogen-doped hierarchical porous carbons with high performance for H2 storage and supercapacitors. *RSC Advances* **2017,** *7*, (52), 32795-32805.

453. Guan, C.; Zhang, X.; Wang, K.; Yang, C., Investigation of H2 storage in a templated carbon derived from zeolite Y and PFA. *Sep. Purif. Technol.* **2009,** *66*, (3), 565-569.

454. Xia, K.; Hu, J.; Jiang, J., Enhanced room-temperature hydrogen storage in super-activated carbons: The role of porosity development by activation. *Appl. Surf. Sci.* **2014,** *315*, 261-267.

455. Castro, M. M. d.; Martínez-Escandell, M.; Molina-Sabio, M.; Rodríguez-Reinoso, F., Hydrogen adsorption on KOH activated carbons from mesophase pitch containing Si, B, Ti or Fe. *Carbon* **2010,** *48*, (3), 636-644.

456. Knight, E. W.; Gillespie, A. K.; Prosniewski, M. J.; Stalla, D.; Dohnke, E.; Rash, T. A.; Pfeifer, P.; Wexler, C., Determination of the enthalpy of adsorption of hydrogen in activated carbon at room temperature. *Int. J. Hydrogen Energy* **2020,** *45*, (31), 15541-15552.

457. Minuto, F. D.; Policicchio, A.; Aloise, A.; Agostino, R. G., Liquid-like hydrogen in the micropores of commercial activated carbons. *Int. J. Hydrogen Energy* **2015,** *40*, (42), 14562-14572.

458. Park, S. J.; Lee, S. Y., A study on hydrogen-storage behaviors of nickel-loaded mesoporous MCM-41. *J. Colloid Interface Sci.* **2010,** *346*, (1), 194-8.

459. Martínez de Yuso, A.; De Fina, M.; Nita, C.; Fioux, P.; Parmentier, J.; Matei Ghimbeu, C., Synthesis of sulfur-doped porous carbons by soft and hard templating processes for CO 2 and H 2 adsorption. *Micropor. Mesopor. Mater.* **2017,** *243*, 135-146.

460. Cai, J.; Bennici, S.; Shen, J.; Auroux, A., The influence of metal- and N-species addition in mesoporous carbons on the hydrogen adsorption capacity. *Mater. Chem. Phys.* **2015,** *161*, 142-152.