

IR Spectroscopy in Catalysis

Janusz Ryczkowski

*University of Maria Curie-Skłodowska, Faculty of Chemistry
Department of Chemical Technology, Pl. M. Curie-Skłodowskiej 3, 20-031 Lubin, Poland
Tel. +48-81 537-55-96; Fax: +48-81 537-55-65; e-mail: ryczkows@hermes.umcs.lublin.pl*

Subject index

acetone

- adsorption on TiO_2 318
- condensation reaction 296, 309
- hydrogen bonded 278, 282, 286, 308, 309, 311
- oxime 315
- polymerisation 292, 340

acetonitrile 265, 277, 278, 291, 312

- basic sites 277–278, 280–282, 286, 291, 292
- H-ZSM-5 306, 307, 309, 311, 312, 315, 326, 332, 334, 344
- probe molecule 265, 277, 278, 280, 281, 293, 307, 328, 332
- transformation 289, 291, 298, 305, 306, 334, 346, 349

acid sites 265, 277–282, 284, 286, 292, 297, 307, 309, 311, 312, 318, 323, 327, 332, 337, 338, 339

- Lewis 265, 277–278, 280–282, 284–286, 291, 292, 297, 304, 307–309, 311, 312, 316, 318, 320, 323, 326, 332, 338, 339

acidity 265–267, 277, 278, 296, 306, 311, 312, 318–320, 332, 337, 338

- MCM-41 316, 317, 319
- Mn_3O_4 292, 293, 296
- Vanadia/alumina 332
- zeolite 265, 277, 306–312, 314, 316, 325, 332–334, 337, 340, 343, 344, 350

adsorption 263–267, 272, 277–278, 280–290, 292, 294, 296–304, 307–320, 322, 323, 325–329, 332–335, 337, 338, 340, 343, 345–350, 353

- acetic acid 285, 286, 304
- acetone 278, 285, 286, 292, 296, 309, 315, 334, 378
- acetylene 281, 282, 292
- ammonia 264, 265, 277, 278, 309, 310, 318, 319, 332, 349
- carbon dioxide 265, 277, 289, 292, 303, 319, 320, 337, 349
- carbon monoxide 264, 265, 267, 277, 288, 289, 297, 301, 314, 319, 325, 344, 348

- cobalt carbonyl 286
- crotonaldehyde 323–325
- 1,2-dichlorobenzene 294, 295
- EDTA 263, 338, 349–351, 353
- ethanol 265, 284, 340
- ethylene 287–289, 295, 301, 304, 311, 320, 334, 343, 345, 348, 349
- formic acid 272, 319
- hydrogen 277–278, 281–284, 286, 288, 289, 291, 292, 294, 297, 298, 300, 304, 307, 308, 309, 311, 316, 319, 323, 325, 327, 340, 344, 349
- MBOH 263, 292–294
- methane 265, 267, 270, 281, 284, 289, 291–293, 301, 303, 306, 307, 315, 319, 327
- methyl formate 286
- molybdenum hexacarbonyl 286
- nitrogen 265, 269, 291, 309, 313, 314, 317, 318, 326, 328, 343, 357
- nitrogen dioxide 265
- nitrogen oxides 318
- phenols 332, 333
- pyridine 265–267, 277–280, 286, 296, 308, 309, 311, 312, 318, 319, 323, 327, 328, 337–339, 344
- sulphur dioxide 277
- thiols 277, 349
- water 265, 271, 272, 275, 278, 283, 289, 296, 298, 301, 304, 309, 315, 316, 319, 320, 322, 349, 353, 356, 357, 358, 360, 381

- alumina 277–281, 284–286, 288, 291, 292, 295, 298, 304, 309–312, 315, 319, 323, 327, 331–335, 338, 348, 350
- acidity 265–267, 277, 278, 296, 306, 311, 312, 318–320, 332, 337, 338
- basicity 278, 281, 292, 308

- ammonia 264, 265, 277, 278, 309, 310, 318, 319, 332, 349
- adsorption 263–267, 272, 277, 278, 280–290, 292, 294, 296–304, 307–320, 322, 323, 325–329, 332–335, 337, 338, 340, 343, 345–350, 353
- probe molecule 265, 277, 278, 280, 281, 293, 307, 328, 332

- benzaldehyde 265, 295, 297

- butenes 265, 294, 334

- carbon deposition 292

- carbonyl 265, 285, 286, 288, 289, 297, 302, 323, 334, 340, 347, 378

- chloroform 265, 277, 361

- coke 298, 304–307, 319, 340

- deactivation 292, 303, 304, 306, 310, 326, 332, 340

- decomposition 272, 275, 281, 286, 292, 296, 306, 307, 310, 313, 314, 318, 323, 327, 328, 331, 333, 334, 340, 341, 343, 349, 361

dehydrogenation 292–294, 296, 306, 319, 347, 349

ethene 265, 284, 306, 309

hydrogenation 280, 285, 289–292, 300–303, 306, 319, 323, 324, 327, 333, 340, 345, 347–349

 butyne 292

 carboxylic acids 286

iso-butene 311, 345, 349

 propylene 316, 317, 319, 345, 347, 349

methane

 activation 267, 286, 292, 295, 296, 298, 311, 326

 catalytic combustion 293

 oxidation 263, 270, 278, 291–296, 298, 300, 301, 303, 306, 307, 311–315, 317, 319–322, 327, 331–334, 342, 345, 347–349

 oxidative coupling 303

 reforming 265, 292, 303, 316, 319

morphology 281, 337

OH groups 277, 278, 281–283, 286, 297, 298, 304, 308, 309, 311, 323, 332

oxidation

 acetone 278, 285, 286, 292, 296, 309, 315, 334, 378

 benzene 277, 278, 294, 306, 309, 311, 349

n-butane 265, 278, 311, 326, 340

 propane 292, 293, 295, 296, 307, 316, 317, 326

 toluene 295–297, 306, 311, 333, 334, 344

 xylene 306

pyridine 265–267, 277, 278–280, 286, 296, 308, 309, 311, 312, 318, 319, 323, 327, 328, 337–339, 344

selective oxidation 294

selective catalytic reduction 263, 316, 317, 332