

Списък на научните трудове на К. Хаджииванов

1. **K. Hadjiivanov**, D. Panayotov, M. Mihaylov, E. Ivanova, K. Chakarova, S. Andonova and N. Drenchev
"Power of Infrared and Raman Spectroscopies to Characterize Metal-Organic Frameworks and Investigate Their Interaction with Guest Molecules"
Chemical Reviews, **121** (2021) 1286-1424.
2. M. Mihaylov, V. Zdravkova, E. Ivanova, H. Aleksandrov, P. Petkov, G. Vayssilov and **K. Hadjiivanov**
"Infrared Spectra of Surface Nitrates: Revision of the Current Opinions Based on the Case Study of Ceria"
Journal of Catalysis, **394** (2021) 245-258.
3. M.Y. Mihaylov, E.Z. Ivanova, G.N. Vayssilov and **K.I. Hadjiivanov**
"Revisiting Ceria-NO_x Interaction: FTIR Studies"
Catalysis Today, **357** (2020) 613-620.
4. S. Andonova, Z.A. Ok, E. Ozensoy and **K. Hadjiivanov**
"Effects Induced by Interaction of the Pt/CeO_x/ZrO_x/γ-Al₂O₃ Ternary Mixed Oxide DeNO_x Catalyst with Hydrogen"
Catalysis Today, **357** (2020) 664-674.
5. N.L. Drenchev, K.K. Chakarova, O.V. Lagunov, M.Y. Mihaylov, E.Z. Ivanova, I. Strauss and **K.I. Hadjiivanov**
"In situ FTIR Spectroscopy as a Tool for Investigation of Gas/Solid Interaction: Water-Enhanced CO₂ Adsorption in UiO-66 Metal-Organic Framework"
Journal of Visualized Experiments, **156** (2020) e60285.
6. I. Strauss, K. Chakarova, A. Mundstock, M. Mihaylov, **K. Hadjiivanov**, N. Guschanski and J. Caro
"UiO-66 and UiO-66-NH₂ Based Sensors: Dielectric and FTIR Investigations on the Effect of CO₂ Adsorption"
Microporous and Mesoporous Materials, **302** (2020) 110227.
7. K. Chakarova, I. Strauss, M. Mihaylov, N. Drenchev and **K. Hadjiivanov**
"Evolution of Acid and Basic Sites in UiO-66 and UiO-66-NH₂ Metal-Organic Frameworks: FTIR Study by Probe Molecules"
Microporous and Mesoporous Materials, **281** (2019) 110-122.
8. R. Prasad, S. Seidner, D.B. Cordes, M. Lozinska, D. Dawson, M. Thompson, T. Düren, K. Chakarova, M. Mihaylov, **K. Hadjiivanov**, F. Hoffmann, A. Slawin, S.E. Ashbrook, M. Clarke and P. Wright
"STA-27, a Porous Lewis Acidic Scandium MOF with an Unexpected Topology Type Prepared with 2,3,5,6-Tetrakis(4-Carboxyphenyl)Pyrazine"
Journal of Materials Chemistry A, **7** (2019) 5685-5701.

9. M.Y. Mihaylov, E.Z. Ivanova, H.A. Aleksandrov, P.St. Petkov, G.N. Vayssilov and **K.I. Hadjiivanov**
"Species Formed during NO Adsorption and NO + O₂ Co-adsorption on Ceria: A Combined FTIR and DFT Study"
Molecular Catalysis, 451 (2018) 114-124.
10. N. Drenchev, M. Rosnes, P.D.C. Dietzel, A. Albinati, **K. Hadjiivanov** and P. Georgiev
"The Open Metal Sites in the Metal-Organic Framework CPO-27-Cu: Detection of Regular and Defect Copper Species by CO and NO Probe Molecules"
Journal of Physical Chemistry C, **122** (2018) 17238-17249.
11. S. Andonova, Z.A. Ok, N. Drenchev, E. Ozensoy and **K. Hadjiivanov**
"Pt/CeO_x/ZrO_x/γ-Al₂O₃ Ternary Mixed Oxide DeNO_x Catalyst: Surface Chemistry and NO_x Interactions"
Journal of Physical Chemistry C, **122** (2018) 12850-12863.
12. A. Bumstead, D. Cordes, D. Dawson, K. Chakarova, M. Mihaylov, C. Hobday, T. Dueren, **K. Hadjiivanov**, A. Slawin, S.E. Ashbrook, R. Prasad and P.A. Wright
*"Modulator-Controlled Synthesis of Microporous STA-26, an Interpenetrated 8,3-Connected Zirconium MOF with the *htl* Topology, and its Reversible Lattice Shift"*
Chemistry – A European Journal, **24** (2018) 6115-6126.
13. O. Lagunov, N. Drenchev, K. Chakarova, D. Panayotov and **K. Hadjiivanov**
"Isotopic Labelling in Vibrational Spectroscopy: a Technique to Decipher the Structure of Surface Species"
Topics in Catalysis, **60** (2017) 1486-1495.
14. S. Andonova, E. Ivanova, J. Yang and **K. Hadjiivanov**
"Adsorption Forms of CO₂ on MIL-53(Al) and MIL-53(Al)-OH_x as Revealed by FTIR Spectroscopy"
Journal of Physical Chemistry C, **121** (2017) 18665-16673.
15. M. Benzaqui, R.S. Pillai, A. Sabetghadam, V. Benoit, P. Normand, J. Marrot, N. Menguy, D. Montero, W. Shepard, A. Tissot, C. Martineau-Corcus, C. Sicard, M. Mihaylov, F. Carn, I. Beurrois, P.L. Llewellyn, G. De Weireld, **K. Hadjiivanov**, J. Gascon, F. Kapteijn, G. Maurin, N. Steunou and C. Serre
"Revisiting the Aluminum Trimesate-Based MOF (MIL-96): From Structure Determination to the Processing of Mixed Matrix Membranes for CO₂ Capture"
Chemistry of Materials, **29** (2017) 10326-10338.
16. H.A. Aleksandrov, K.M. Neyman, **K.I. Hadjiivanov** and G.N. Vayssilov
"Can the State of Platinum Species be Unambiguously Determined by the Stretching Frequency of an Adsorbed CO Probe Molecule?"
Physical Chemistry Chemical Physics, **18** (2016) 22108-22121.
17. K. Chakarova, S. Andonova, L. Dimitrov and **K. Hadjiivanov**
"FTIR Study of CO and N₂ Adsorption on [Ge]FAU Zeolites in Their Na- and H-forms"
Microporous and Mesoporous Materials, **220** (2016) 188-197.

18. M. Mihaylov, K. Chakarova, S. Andonova, N. Drenchev, E. Ivanova, A. Sabetghadam, B. Seoane, J. Gascon, F. Kapteijn and **K. Hadjiivanov**
"Adsorption Forms of CO₂ on MIL-53(Al) and NH₂-MIL-53(Al) as Revealed by FTIR Spectroscopy"
Journal of Physical Chemistry C, **120** (2016) 23584-23595.
19. N. Drenchev, M. Mihaylov, P. Dietzel, A. Albinati, P. Georgiev and **K. Hadjiivanov**
"Low-Temperature Adsorption of H₂ and D₂ on Dehydrated and Water Precovered CPO-27-Ni"
Journal of Physical Chemistry C, **120** (2016) 23083-23092.
20. V. Zdravkova, N. Drenchev, K. Chakarova, M. Mihaylov and **K. Hadjiivanov**
"FTIR Study of CO and NO Co-Adsorption on Cu-ZSM-5: Does a Cu⁺(CO)(NO) Complex Exist?"
Current Physical Chemistry, **6** (2016) 152-161.
21. M. Mihaylov, K. Chakarova, S. Andonova, N. Drenchev, E. Ivanova, E.A. Pidko, A. Sabetghadam, B. Seoane, J. Gascon, F. Kapteijn and **K. Hadjiivanov**
"Adsorption of CO₂ on MIL-53(Al): FTIR Evidence of Formation of Dimeric CO₂ Species"
Chemical Communications, **52** (2016) 1494-1497.
22. M. Mihaylov, S. Andonova, K. Chakarova, A. Vimont, E. Ivanova, N. Drenchev and **K. Hadjiivanov**
"An Advanced Approach for Measuring Acidity of Hydroxyls in Confined Space: FTIR Study of Low-temperature CO and ¹⁵N₂ Adsorption on MOF Samples from the MIL-53(Al) Series"
Physical Chemistry Chemical Physics, **17** (2015) 24304-24314.
23. D. Panayotov, E. Ivanova, M. Mihaylov, K. Chakarova, T. Spassov and **K. Hadjiivanov**
"Hydrogen Spillover on Rh/TiO₂: The FTIR Study of Donated Electrons, Co-adsorbed CO and H/D Exchange"
Physical Chemistry Chemical Physics, **17** (2015) 20563-20573.
24. V. Zdravkova, N. Drenchev, E. Ivanova, M. Mihaylov and **K. Hadjiivanov**
"Surprising Coordination Chemistry of Cu⁺ Cations in Zeolites: FTIR Study of Adsorption and Coadsorption of CO, NO, N₂, and H₂O on Cu-ZSM-5"
Journal of Physical Chemistry C, **119** (2015) 15292-15302.
25. **K. Hadjiivanov**, E. Ivanova, M. Mihaylov and K. Chakarova
"Adsorption of Two or More Molecules on One Cationic Center in Porous Materials"
Comprehensive Guide for Mesoporous Materials, Volume 2: Analysis and Functionalization, Nova Science Publishers, New York, USA, 2015, 269-288.
26. M.Y. Mihaylov, E.Z. Ivanova, H.A. Aleksandrov, P.St. Petkov, G.N. Vayssilov and **K.I. Hadjiivanov**
"Formation of N₃⁻ During Interaction of NO with Reduced Ceria"
Chemical Communications, **51** (2015) 5668-5671.

27. I. Voleská, P. Nachtigall, E. Ivanova, **K. Hadjiivanov** and R. Bulánek
"Theoretical and Experimental Study of CO Adsorption on Ca-FER zeolite"
Catalysis Today, **243** (2015) 53-61.
28. M.Y. Mihaylov, E.Z. Ivanova, H.A. Aleksandrov, P.St. Petkov, G.N. Vayssilov and **K.I. Hadjiivanov**
"FTIR and Density Functional Study of NO Interaction with Reduced Ceria: Identification of N_3^- and NO_2^- as New Intermediates in NO Conversion"
Applied Catalysis B, **176-177** (2015) 107-119.
29. **K. Hadjiivanov**, M. Mihaylov, D. Panayotov, E. Ivanova and K. Chakarova
"Isotopes in the FTIR Investigations of Solid Surfaces"
Spectroscopic Properties of Inorganic and Organometallic Compounds, **45** (2014) 43-78.
30. D. Perra, N. Drenchev, K. Chakarova, M.G. Cutrufello and **K. Hadjiivanov**
"Remarkable Acid Strength of Ammonium Ions in Zeolites: FTIR Study of Low-temperature CO Adsorption on NH_4FER "
RSC Advances, **4** (2014) 56183-56187.
31. D. Panayotov, M. Mihaylov, D. Nihtianova, T. Spassov and **K. Hadjiivanov**
"Spectral Evidence for Hydrogen-induced Reversible Segregation of CO Adsorbed on Titania-supported Rhodium"
Physical Chemistry Chemical Physics, **16** (2014) 13136-13144.
32. N. Drenchev and **K. Hadjiivanov**
"Interaction of H_2 (D_2) with OH (OD) Groups in a ZSM-5 Zeolite: FTIR Study of the Isotopic Effects"
Journal of Physical Chemistry C, **118** (2014) 25118-25123.
33. M. Tortorelli, K. Chakarova, L. Lisi and **K. Hadjiivanov**
"Disproportionation of Associated Cu^{2+} Sites in Cu-ZSM-5 to Cu^+ and Cu^{3+} and FTIR Detection of $Cu^{3+}(NO)_x$ ($x = 1, 2$) Species"
Journal of Catalysis, **309** (2014) 376-385.
34. T. Tsoncheva, I. Genova, M. Stoyanova, M.-M. Pohl, R. Nickolov, M. Dimitrov, E. Sarcadi-Priboczki, M. Mihaylov, D. Kovacheva and **K. Hadjiivanov**
"Effect of Mesoporous Silica Topology on the Formation of Active Sites in Copper Supported Catalysts for Methanol Decomposition"
Applied Catalysis B, **147** (2014) 684-697.
35. **K. Hadjiivanov**
"Identification and Characterization of Surface Hydroxyl Groups by Infrared Spectroscopy"
Advances in Catalysis, **57** (2014) 99-318.
36. K. Chakarova and **K. Hadjiivanov**
"FTIR Study of N_2 and CO Adsorption on H-D-FER"
Microporous and Mesoporous Materials, **177** (2013) 59-65.
37. K. Chakarova, N. Drenchev, M. Mihaylov, P. Nikolov and **K. Hadjiivanov**
"OH/OD Isotopic Shift Factors of Isolated and H-bonded Surface Silanol Groups"
Journal of Physical Chemistry C, **117** (2013) 5242-5248.

38. K. Chakarova, P. Nikolov and **K. Hadjiivanov**
"Different Brønsted Acidity of H-ZSM-5 and D-ZSM-5 Zeolites Revealed by the FTIR Spectra of Adsorbed CD₃CN"
Catalysis Communications, **41** (2013) 38-40.
39. N. Drenchev, I. Spassova, E. Ivanova, M. Khristova and **K. Hadjiivanov**
"Cooperative Effect of Ce and Mn in MnCe/Al₂O₃ Environmental Catalysts"
Applied Catalysis, **B138-139** (2013) 362-372.
40. O. Lagunov, K. Chakarova and **K. Hadjiivanov**
*"Silver-catalyzed Low-temperature CO Isotopic Scrambling Reaction:
 $^{12}\text{C}^{16}\text{O} + ^{13}\text{C}^{18}\text{O} \rightarrow ^{12}\text{C}^{18}\text{O} + ^{13}\text{C}^{16}\text{O}$ "*
Physical Chemistry Chemical Physics, **14** (2012) 2178-2182.
41. H.A. Aleksandrov, V.R. Zdravkova, M.Y. Mihaylov, P.St. Petkov, G.N. Vayssilov and **K.I. Hadjiivanov**
"Precise Identification of the Infrared Bands of the Polycarbonyl Complexes on Ni-MOR Zeolite by $^{12}\text{C}^{16}\text{O}$ – $^{13}\text{C}^{18}\text{O}$ Co-adsorption and Computational Modeling"
Journal of Physical Chemistry C, **116** (2012) 22823-22831.
42. K. Chakarova, N. Drenchev and **K. Hadjiivanov**
"FTIR Evidence of Different Bonding of Methane to OH Groups on H-ZSM-5, HY and SiO₂"
Journal of Physical Chemistry C, **116** (2012) 17101-17109.
43. V. Zdravkova, M. Mihaylov and **K. Hadjiivanov**
"Coordination of Two N₂ Molecules to One Ni⁺ Site in Ni-ZSM-5: An FTIR Spectroscopy Study"
Journal of Physical Chemistry C, **116** (2012) 12706-12711.
44. **K. Hadjiivanov**, K. Chakarova, N. Drenchev and M. Mihaylov,
"Characterization of Porous Materials by FTIR Spectroscopy of Isotopically Labelled Probe Molecules"
Current Physical Chemistry, **2** (2012) 151-161.
45. A. Gallo, T. Tsoncheva, M. Marelli, M. Mihaylov, M. Dimitrov, V. Dal Santo and **K. Hadjiivanov**
"Size-controlled Copper Nanoparticles Hosted in Mesoporous Silica Matrix: Preparation and Characterization"
Applied Catalysis B, **126** (2012) 161-171.
46. M. Mihaylov, O. Lagunov, E. Ivanova and **K. Hadjiivanov**
"Determination of Polycarbonyl Species on Nickel-containing Catalysts by Adsorption of CO Isotopic Mixtures"
Topics in Catalysis, **54** (2011) 308-317.
47. L. Dimitrov, M. Mihaylov, **K. Hadjiivanov** and V. Mavrodinova
"Catalytic Properties and Acidity of ZSM-12 Zeolite with Different Textures"
Microporous and Mesoporous Materials, **143** (2011) 291-301.
48. K. Chakarova and **K. Hadjiivanov**
"Interaction of Benzene with Hydroxyl Groups in Zeolites: A FTIR Study of C₆H₆ and C₆D₆ Adsorption on H-ZSM-5 and D-ZSM-5"
Microporous and Mesoporous Materials, **143** (2011) 180-188.

49. G.N. Vayssilov, M. Mihaylov, P.St. Petkov, **K.I. Hadjiivanov** and K. Neyman,
"Reassignment of the Vibrational Spectra of Carbonates, Formates and Related Surface Species on Ceria: A Combined Density Functional and Infrared Spectroscopy Investigation"
Journal of Physical Chemistry C, **115** (2011) 23435-23454.
50. K. Chakarova, M. Mihaylov, S. Ivanova, M.A. Centeno and **K. Hadjiivanov**
"Well Defined Negatively Charged Gold Carbonyls on Au/SiO₂"
Journal of Physical Chemistry C, **115** (2011) 21273-21282.
51. M. Mihaylov, O. Lagunov, E. Ivanova and **K. Hadjiivanov**
"Nature of the Polycarbonyl Species on Ru/ZrO₂: Re-assignment of Some Carbonyl Bands"
Journal of Physical Chemistry C, **115** (2011) 13860-13867.
52. K. Chakarova and **K. Hadjiivanov**
"H-bonding of Zeolite Hydroxyls with Weak Bases: FTIR Study of CO and N₂ Adsorption on H-D-ZSM-5"
Journal of Physical Chemistry C, **115** (2011) 4806-4817.
53. N. Drenchev, P.A. Georgiev and **K. Hadjiivanov**
"FTIR Study of ¹²C¹⁶O and ¹³C¹⁸O Coadsorption on Cu-ZSM-5"
Journal of Molecular Catalysis, **A341** (2011) 7-13.
54. M. Mihaylov, T. Tsoncheva and **K. Hadjiivanov**
"Structure Sensitivity of Methanol Decomposition on Ni/SiO₂ Catalysts"
Journal of Materials Science, **46** (2011) 7144-7151.
55. K. Chakarova and **K. Hadjiivanov**
"Problems in the IR Measuring the Acidity of Zeolite Bridging Hydroxyls by Low-temperature CO Adsorption"
Chemical Communications, **47** (2011) 1878-1880.
56. K. Chakarova, G. Petrova, M. Dimitrov, L. Dimitrov, G. Vayssilov, T. Tsoncheva and **K. Hadjiivanov**
"Coordination State of Cu⁺ Ions in Cu-[Al]MCM-41"
Applied Catalysis B, **106** (2011) 186-194.
57. M. Mihaylov, E. Ivanova, K. Chakarova, P. Novachka and **K. Hadjiivanov**
"Reduced Iron Sites in Fe-BEA and Fe-ZSM-5 Zeolites: FTIR study of CO Adsorption and ¹²C¹⁶O-¹³C¹⁸O Co-adsorption"
Applied Catalysis A, **391** (2011) 3-10.
58. N. Drenchev, E. Ivanova, M. Mihaylov and **K. Hadjiivanov**
"CO as an IR Probe Molecule for Characterization of Copper Ions in a Basolite C300 MOF sample"
Physical Chemistry Chemical Physics, **12** (2010) 6423-6427.
59. **K. Hadjiivanov**, E. Ivanova, R. Kefirov, J. Janas, A. Plesniar, S. Dzwigaj and M. Che
"Adsorption Properties of Fe-containing Dealuminated BEA Zeolites as Revealed by FTIR Spectroscopy"
Microporous and Mesoporous Materials, **131** (2010) 1-12.

60. D. Panayotov, S. Burrows, M. Mihaylov, **K. Hadjiivanov**, B.M. Tissue and J.R. Morris
"Effect of Methanol on the Lewis Acidity of Rutile TiO₂ Nanoparticles Probed through Vibrational Spectroscopy of Coadsorbed CO"
Langmuir, **26** (2010) 8106-8112.
61. M. Mihaylov, E. Ivanova, N. Drenchev and **K. Hadjiivanov**
"Coordination Chemistry of Fe²⁺ Ions in Fe,H-ZSM-5 Zeolite as Revealed by the IR Spectra of Adsorbed CO and NO"
Journal of Physical Chemistry C, **114** (2010) 1004-1014.
62. I. Malpartida, E. Ivanova, M., Mihaylov, **K. Hadjiivanov**, V. Blasin-Aube, O. Marie and M. Daturi
"CO and NO Adsorption for the IR Characterization of Fe²⁺ Cations in Ferrierite: An Efficient Catalyst for NO_x SCR with NH₃ as Studied by Operando IR Spectroscopy"
Catalysis Today, **149** (2010) 295-303.
63. E. Ivanova, M. Mihaylov, **K. Hadjiivanov**, V. Blasin-Aube, O. Marie, A. Plesniar and M. Daturi
"Evidencing Three Distinct Fe^{II} Sites in Fe-FER Zeolites by Using CO and NO as Complementary IR Probes"
Applied Catalysis B, **93** (2010) 325-338.
64. C. Quétel, E. Vassileva, I. Petrov, K. Chakarova and **K. Hadjiivanov**
"First Results on Fe Solid-phase Extraction from Coastal Seawater Using Anatase TiO₂ Nano-particles"
Analytical and Bioanalytical Chemistry, **396** (2010) 2349-2361.
65. **K. Hadjiivanov** and H. Knözinger
"Characterization of Vacant Coordination Sites of Cations on the Surfaces of Oxides and Zeolites Using Infrared Spectroscopy of Adsorbed Probe Molecules"
Surface Science, **603** (2009) 1629-1636.
66. **K. Hadjiivanov**, A. Penkova, R. Kefirov, S. Dzwigaj and M. Che
"Influence of Dealumination and Treatments on the Chromium Speciation in Zeolite CrBEA"
Microporous and Mesoporous Materials, **125** (2009) 59-69.
67. K. Chakarova and **K. Hadjiivanov**
"Coordination Chemistry of Cobalt Ions in Ferrierite: an FTIR Spectroscopic Study"
Microporous and Mesoporous Materials, **123** (2009) 123-128.
68. A. Penkova, J.M. Martinez Blanes, S.A. Cruz, A.M. Centeno, **K. Hadjiivanov** and J.A. Odriozola
"Gold Nanoparticles on Silica Monospheres Modified by Amino Groups"
Microporous and Mesoporous Materials, **117** (2009) 530-534.
69. Y. Pekounov, K. Chakarova and **K. Hadjiivanov**
"Surface Acidity of Calcium Phosphate and Calcium Hydroxyapatite: FTIR Spectroscopic Study of Low-temperature CO Adsorption"
Materials Science and Engineering C, **29** (2009) 1178-1181.

70. R. Bulánek, I. Voleská, E. Ivanova, **K. Hadjiivanov** and P. Nachtigall
"Localization and Coordination of Mg²⁺ Cations in Ferrierite: Combined FTIR Spectroscopic and Computation Investigation of CO Adsorption Complexes"
Journal of Physical Chemistry C, **113** (2009) 11066-11076.
71. V. Blasin-Aubé, O. Marie, J. Saussey, M. Daturi, C. Hamon, M. Mihaylov, E. Ivanova and **K. Hadjiivanov**
"Iron Nitrosyl Species in Fe-FER: A Complementary Mössbauer and FTIR Spectroscopy Study"
Journal of Physical Chemistry C, **113** (2009) 8387-8393.
72. Y. Hao, M. Mihaylov, E. Ivanova, **K. Hadjiivanov**, H. Knözinger and B.C. Gates
"CO Oxidation Catalyzed by Gold Supported on MgO: Spectroscopic Identification of Carbonate-like Species Bonded to Gold during Catalyst Deactivation"
Journal of Catalysis, **261** (2009) 137-149.
73. S. Dzwigaj, E. Ivanova, R. Kefirov, **K. Hadjiivanov**, F. Averseng, J.M. Krafft and M. Che
"Remarkable Effect of the Preparation Method on the State of Vanadium in BEA Zeolite: Lattice and Extra-Lattice V Species"
Catalysis Today, **142** (2009) 185-191.
74. A. Penkova, K. Chakarova, O.H. Laguna, **K. Hadjiivanov**, F. Romero Sarria, M.A. Centeno and J.A. Odriozola
"Redox Chemistry of Gold in a Au/FeO_x/CeO₂ CO Oxidation Catalyst"
Catalysis Communications, **10** (2009) 1196-1202.
75. C. Resini, T. Venkov, **K. Hadjiivanov**, S. Presto, P. Riani, R. Marazza, G. Ramis and G. Busca
"An FTIR Study of the Dispersed Ni Species on Ni-YSZ Catalysts"
Applied Catalysis A, **353** (2009) 137-143.
76. **K. Hadjiivanov**
"Chapter 10: Application of Isotopically Labelled IR Probe Molecules for Characterization of Porous Materials"
Ordered Porous Solids - Recent Advances and Prospects, (V. Valtchev, S. Mintova and M. Tsapatis, Eds.), Elsevier, Amsterdam, 2009 (ISBN: 978-0-444-53189-6) 2008, pp. 263-281.
77. R. Kefirov, A. Penkova, **K. Hadjiivanov**, S. Dzwigaj and M. Che
"Stabilization of Cu⁺ Ions in BEA Zeolite: Study by FTIR Spectroscopy of Adsorbed CO and TPR"
Microporous and Mesoporous Materials, **116** (2008) 180-187.
78. M. Mihaylov, E. Ivanova, Y. Hao, **K. Hadjiivanov**, H. Knözinger and B. Gates
"Gold Supported on La₂O₃: Structure and Reactivity with CO₂ and Implications for CO Oxidation Catalysis"
Journal of Physical Chemistry, **C112** (2008) 18973-18983.
79. M. Mihaylov, E. Ivanova, Y. Hao, **K. Hadjiivanov**, B.C. Gates and H. Knözinger
"Oxidation by CO₂ of Au⁰ Species on La₂O₃-Supported Gold Clusters"
Chemical Communications, **44** (2008) 175-177.

80. R. Kefirov, E. Ivanova, **K. Hadjiivanov**, S. Dzwigaj and M. Che
"FTIR Characterization of Fe^{3+} -OH groups in Fe-H-BEA Zeolite: Interaction with CO and NO"
Catalysis Letters, **125** (2008) 209-214.
81. F. Romero-Sarria, A. Penkova, J.M. Martinez T., A.M. Centeno, **K. Hadjiivanov** and J.A. Odriozola
"Role of Water in the CO Oxidation Reaction on Au/CeO₂: Modification of the Surface Properties"
Applied Catalysis B, **84** (2008) 119-124.
82. E. Ivanova, M. Mihaylov, H. Aleksandrov, M. Daturi, F. Thibault-Starzyk, G. Vayssilov, N. Rösch and **K. Hadjiivanov**
"Unusual Carbonyl-Nitrosyl Complexes of Rh^{2+} in Rh-ZSM-5: A Combined FTIR Spectroscopy and Computational Study"
Journal of Physical Chemistry C, **111** (2007) 10412-10418.
83. A. Penkova, S. Dzwigaj, R. Kefirov, **K. Hadjiivanov** and M. Che
"Effect of the Preparation Method on the State of Nickel Ions in BEA Zeolites. A Study by FTIR Spectroscopy of Adsorbed CO and NO, TPR and XRD"
Journal of Physical Chemistry C, **111** (2007) 8623-8631.
84. M. Mihaylov, B.C. Gates, J.C. Fierro-Gonzalez, **K. Hadjiivanov** and H. Knözinger
"Redox Behavior of Gold Species in Zeolite NaY: Characterization by Infrared Spectroscopy of Adsorbed CO"
Journal of Physical Chemistry C, **111** (2007) 2548-2556.
85. E. Ivanova, M. Mihaylov, F. Thibault-Starzyk, M. Daturi and **K. Hadjiivanov**
"FTIR spectroscopy study of CO and NO adsorption and Co-adsorption on Pt/TiO₂"
Journal of Molecular Catalysis A, **274** (2007) 179-186.
86. K. Chakarova, **K. Hadjiivanov**, G. Atanasova and K. Tenchev
"Effect of Preparation Technique on the Properties of Platinum in NaY Zeolite: A Study by FTIR Spectroscopy of Adsorbed CO"
Journal of Molecular Catalysis A, **264** (2007) 270-279.
87. Hr. Klimev, K. Fajerweg, K. Chakarova, L. Delannoy, C. Louis and **K. Hadjiivanov**
"Oxidation of Gold Metal Particles Supported on TiO₂: an FTIR Study by means of Low-temperature CO Adsorption"
Journal of Materials Science, **43** (2007) 3299-3306.
88. M. Mihaylov, H. Knözinger, **K. Hadjiivanov** and B.C. Gates
"Characterization of the Oxidation States of Supported Gold Species by IR Spectroscopy of CO Probe Molecule"
Chemie Ingenieur Technik, **79** (2007) 795-806.
89. **K. Hadjiivanov**, A. Penkova and M. Centeno
"FTIR Indication of CO Interaction with O^{2-} ions: A New Adsorption Form in the Gap between Chemi- and Physisorbed CO"
Catalysis Communications, **8** (2007) 1715-1718.

90. M. Mihaylov, **K. Hadjiivanov** and H. Knözinger
"Effect of Cr and Pt Promoters on the Surface Properties of Tungstated Zirconia: FTIR Spectroscopy of Probe Molecules (CO and NO)"
Physical Chemistry Chemical Physics, **8** (2006) 407-417.
91. E. Ivanova, **K. Hadjiivanov**, S. Dzwigaj and M. Che
"FT-IR Study of CO and NO Adsorption on a VSiBEA Zeolite"
Microporous and Mesoporous Materials, **89** (2006) 69-77.
92. A. Mihaylova, **K. Hadjiivanov**, S. Dzwigaj and M. Che
"Remarkable Effect of the Preparation Technique on the State of Cobalt Ions in BEA Zeolites Evidenced by FTIR Spectroscopy of Adsorbed CO and NO, TPR and XRD"
Journal of Physical Chemistry B, **110** (2006) 19530-19536.
93. M. Mihaylov, E. Ivanova, Thibault-Starzyk, M. Daturi, L. Dimitrov and **K. Hadjiivanov**
"New Types of Non-classical Iridium Carbonyls Formed in Ir-ZSM-5: An FTIR Spectroscopy Investigation"
Journal of Physical Chemistry B, **110** (2006) 10383-10389.
94. M. Mihaylov, J.C. Fierro-Gonzalez, H. Knözinger, B.C. Gates and **K. Hadjiivanov**
"Formation of Non-classical Gold Carbonyls in Zeolite NaY: Characterization by Infrared Spectroscopy"
Journal of Physical Chemistry B, **110** (2006) 7695-7701.
95. M.A. Centeno, **K. Hadjiivanov**, Tz. Venkov, Hr. Klimev and J.A. Odriozola
"Comparative Study of Au/Al₂O₃ and Au/CeO₂-Al₂O₃ Catalysts"
Journal of Molecular Catalysis A, **252** (2006) 142-149.
96. M. Mihaylov, A. Penkova, **K. Hadjiivanov** and M. Daturi
"Chromium Nitrosyl Complexes in Cr-ZSM-5: an FTIR Spectroscopic Study"
Journal of Molecular Catalysis A, **249** (2006) 40-46.
97. Tz. Venkov, M. Dimitrov and **K. Hadjiivanov**
"FTIR Spectroscopic Study of the Nature and Reactivity of NO_x Compounds Formed on Cu/Al₂O₃ after Coadsorption of NO and O₂"
Journal of Molecular Catalysis A, **243** (2006) 8-16.
98. Tz. Venkov, Hr. Klimev, M.A. Centeno, J.A. Odriozola and **K. Hadjiivanov**
"State of Gold on an Au/Al₂O₃ Catalyst Subjected to Different Pre-treatments: an FTIR Study"
Catalysis Communications, **7** (2006) 308-313.
99. Tz. Venkov, K. Fajerweg, L. Delannoy, Hr. Klimev, **K. Hadjiivanov** and C. Louis
"Effect of the Activation Temperature on the State of Gold Supported on Titania: an FTIR Spectroscopic Study"
Applied Catalysis A, **301** (2006) 106-114.
100. K. Chakarova, M. Mihaylov and **K. Hadjiivanov**
"FTIR Spectroscopic Study of CO Adsorption on Pt-H-ZSM-5"
Microporous and Mesoporous Materials, **81** (2005) 305-312.
101. M. Mihaylov, K. Chakarova, **K. Hadjiivanov**, O. Marie and M. Daturi
"FTIR Spectroscopy Study of CO Adsorption on Pt-Na-Mordenite"
Langmuir, **21** (2005) 11821-11828.

102. E. Ivanova, M. Mihaylov, F. Thibault-Starzyk, M. Daturi and **K. Hadjiivanov**
"New Type of Rhodium Gem-dicarbonyls Formed in Rh-ZSM-5: An FTIR Spectroscopy Study"
Journal of Catalysis, **236** (2005) 168-171.
103. K. Chakarova, M. Mihaylov and **K. Hadjiivanov**
"Polycarbonyl Species in Pt/H-ZSM-5: FTIR Spectroscopic Study of ^{12}CO - ^{13}CO Coadsorption"
Catalysis Communications, **6** (2005) 466-471.
104. K. Chakarova, E. Ivanova, **K. Hadjiivanov**, D. Klissurski and H. Knözinger
"Co-ordination Chemistry of Palladium Cations in Pd-H-ZSM-5 as Revealed by FTIR Spectra of Adsorbed and Co-adsorbed Probe Molecules (CO and NO)"
Physical Chemistry Chemical Physics, **6** (2004) 3702-3709.
105. A. Penkova, **K. Hadjiivanov**, M. Mihaylov, M. Daturi, J. Saussey and J.-C. Lavalley
"FTIR Spectroscopic Study of Low-temperature NO Adsorption and NO + O₂ Coadsorption on H-ZSM-5"
Langmuir, **20** (2004) 5425-5431.
106. S. Kannan, Tz. Venkov, **K. Hadjiivanov** and H. Knözinger
"Fourier Transform Infrared Study of Low-Temperature CO Adsorption on CuMgAl-Hydrotalcite"
Langmuir, **20** (2004) 730-736.
107. M. Mihaylov, A. Penkova, **K. Hadjiivanov** and H. Knözinger
"Formation of Surface Carbonyl and Nitrosyl Complexes on Titania- and Zirconia-supported Chromia"
Journal of Physical Chemistry B, **108** (2004) 679-688.
108. T. Tsontcheva, Tz. Venkov, M. Dimitrov, C. Minchev and **K. Hadjiivanov**
"Copper-modified Mesoporous MCM-41 silica: FTIR and Catalytic Study"
Journal of Molecular Catalysis A, **209** (2004) 125-134.
109. M. Mihaylov, K. Chakarova and **K. Hadjiivanov**
"Formation of Carbonyl and Nitrosyl Complexes on Titania- and Zirconia-supported Nickel: FTIR Spectroscopy Study"
Journal of Catalysis, **228** (2004) 273-281.
110. M. Mihaylov and **K. Hadjiivanov**
"Redox Couples in the Selective Catalytic Reduction of NO_x with Hydrocarbons over Co-ZSM-5 and Ni-ZSM-5 Catalysts: an FT-IR Study"
Chemical Communications, **40** (2004) 2200-2201.
111. M. Mihaylov, **K. Hadjiivanov** and D. Panayotov
"FTIR Mechanistic Studies on the Selective Catalytic Reduction of NO_x with Methane over Ni-containing Zeolites: Comparison between NiY and Ni-ZSM-5"
Applied Catalysis B, **51** (2004) 33-42.
112. P. Vijayanand, K. Chakarova, **K. Hadjiivanov**, P. Lukinskas and H. Knözinger
"On the Nature of Pdⁿ⁺ Surface Carbonyl and Nitrosyl Complexes Formed on Pd-promoted Tungstated Zirconia Catalyst"
Physical Chemistry Chemical Physics, **5** (2003) 4040-4045.

113. **K. Hadjiivanov**, B. Tsyntsarski, Tz. Venkov, D. Klissurski, M. Daturi, J. Saussey and J.-C. Lavalley,
"FTIR Spectroscopic Study of CO Adsorption on Co-ZSM-5: Evidence of Formation of $\text{Co}^+(\text{CO})_4$ Species"
Physical Chemistry Chemical Physics, **5** (2003) 1695-1702.
114. E. Ivanova and **K. Hadjiivanov**,
"Polycarbonyls of Rh^+ Formed after Interaction of CO with Rh-MFI: an FTIR Spectroscopic Study"
Physical Chemistry Chemical Physics, **5** (2003) 655-661.
115. **K. Hadjiivanov**, B. Tsyntsarski, Tz. Venkov, M. Daturi, J. Saussey and J.-C. Lavalley,
"New Types of Polycarbonyls of Co^+ Formed after Interaction of CO with Co-ZSM-5: An FTIR Spectroscopic Study"
Physical Chemistry Chemical Physics, **5** (2003) 243-245.
116. **K. Hadjiivanov**, E. Ivanova and H. Knözinger
"FTIR Study of Low-temperature CO Adsorption on Y zeolite Exchanged with Be^{2+} , Mg^{2+} , Ca^{2+} , Sr^{2+} and Ba^{2+} Cations"
Microporous and Mesoporous Materials, **58** (2003) 225-236.
117. S. Kannan, D. Kishore, **K. Hadjiivanov** and H. Knözinger
"FTIR Study of Low-temperature CO Adsorption on MgAl-hydrotalcite and Its Calcined Forms"
Langmuir, **19** (2003) 5742-5747.
118. Tz. Venkov, **K. Hadjiivanov**, A. Milushev and D. Klissurski
"Fourier Transform Infrared Spectroscopy Study of the Nature and Reactivity of NO_x Compounds Formed after Coadsorption of NO and O_2 on Cu/ZrO₂"
Langmuir, **19** (2003) 3323-3332.
119. **K. Hadjiivanov**, E. Ivanova, L. Dimitrov and H. Knözinger
"FTIR Spectroscopic Study of CO Adsorption on Rh-ZSM-5: Detection of $\text{Rh}^+\text{-CO}$ species"
Journal of Molecular Structure, **661-662** (2003) 459-463.
120. B. Tsyntsarski, V. Avreyska, H. Kolev, Tz. Marinova, D. Klissurski and **K. Hadjiivanov**
"FT-IR Study of the Nature and Reactivity of Surface NO_x Compounds Formed after NO Adsorption and $\text{NO} + \text{O}_2$ Coadsorption on Zirconia- and Sulfated Zirconia-supported Cobalt"
Journal of Molecular Catalysis A, **193** (2003) 139-149.
121. **K. Hadjiivanov**, A. Penkova, M. Daturi, J. Saussey and J.-C. Lavalley
"FTIR Spectroscopic Study of Low-temperature Co-adsorption of NO and O_2 on H-ZSM-5: Evidence of Formation of $[\text{ONNO}]^+$ Species"
Chemical Physics Letters, **377** (2003) 642-646.
122. **K. Hadjiivanov**, E. Ivanova, M. Daturi, J. Saussey and J.-C. Lavalley,
"Nitrosyl Complexes on Co-ZSM-5: an FTIR Spectroscopic Study"
Chemical Physics Letters, **370** (2003) 712-718.

123. **A. Penkova and K. Hadjiivanov**
"FTIR Spectroscopic Study of CO and NO Adsorption on Cr-ZSM-5"
Catalysis Communications, **4** (2003) 485-491.
124. **Tz. Venkov and K. Hadjiivanov**
"FTIR Study of CO Interaction with Cu/TiO₂"
Catalysis Communications, **4** (2003) 209-213.
125. **R. Craciun, B. Netwick, K. Hadjiivanov and H. Knözinger**
"Structure and Redox Properties of MnO_x/Yttrium-stabilized Zirconia (YSZ) Catalyst and its Used in CO and CH₄ Oxidation"
Applied Catalysis A, **243** (2003) 67-79.
126. **K. Hadjiivanov, T. Tsoncheva, M. Dimitrov, C. Mintchev and H. Knözinger**
"Characterization of Cu/MCM-41 and Cu/MCM-48 Mesoporous Catalysts by FTIR Spectroscopy of Adsorbed CO"
Applied Catalysis A, **241** (2003) 331-340.
127. **K. Hadjiivanov, D. Panayotov, V. Avreyska, B. Tsyntsarski, D. Klissurski and Tz. Marinova**
"Combined TPD and FTIR Studies of Co/ZrO₂ Catalysts: Determination of the Cobalt Dispersion"
Surface and Interface Analysis, **34** (2002) 88-91.
128. **Tz. Venkov, K. Hadjiivanov and D. Klissurski**
"IR Spectroscopy Study of NO Adsorption and NO + O₂ Co-adsorption on Al₂O₃"
Physical Chemistry Chemical Physics, **4** (2002) 2443-2448.
129. **M. Mihaylov and K. Hadjiivanov**
"FTIR Study of CO and NO Adsorption and Coadsorption on Ni-ZSM-5 and Ni/SiO₂"
Langmuir, **18** (2002) 4376-4383.
130. **K. Hadjiivanov, V. Avreyska, D. Klissurski and Tz. Marinova**
"Surface Species Formed after NO Adsorption and NO + O₂ Coadsorption on ZrO₂ and Sulfated ZrO₂: An FTIR Spectroscopic Study"
Langmuir, **18** (2002) 1619-1625.
131. **K. Hadjiivanov, H. Knözinger and M. Mihaylov**
"FTIR Study of CO Adsorption on Ni-ZSM-5"
Journal of Physical Chemistry B, **106** (2002) 2618-2624.
132. **T. Weingang, S. Kuba, K. Hadjiivanov and H. Knözinger**
"Nature and Reactivity of the Surface Species Formed After NO Adsorption and NO + O₂ Coadsorption on a WO₃-ZrO₂ Catalyst"
Journal of Catalysis, **209** (2002) 539-546.
133. **K. Hadjiivanov, P. Likinskas and H. Knözinger**
"Detection of Reduced Wⁿ⁺ Sites on WO₃-ZrO₂ and Pt/WO₃-ZrO₂ Catalysts by Infrared Spectroscopy of Adsorbed NO"
Catalysis Letters, **82** (2002) 73-77.

134. **K. Hadjiivanov**, E. Ivanova, M. Kantcheva, E. Ciftikli, D. Klissurski, L. Dimitrov and H. Knözinger
"FTIR Study of Low-temperature CO adsorption on Mn-ZSM-5 and MnY Zeolites. Effect of the Zeolite Matrix on the Formation of $Mn^{2+}(CO)_2$ Geminal Species"
Catalysis Communications, **3** (2002) 313-319.
135. **K. Hadjiivanov**, H. Knözinger and A. Milushev
"FTIR Spectroscopic Study of Low-temperature CO Adsorption on Cu/silicalite-1"
Catalysis Communications, **3** (2002) 37-44.
136. A. Penkova, **K. Hadjiivanov** and D. Klissurski
"FTIR Study of CO Adsorption on Chromia Surfaces With Different Oxidation Degrees"
Bulgarian Chemical Communications, **34** (2002) 298-309.
137. **K. Hadjiivanov** and G. Vayssilov
"Characterization of Oxide Surfaces and Zeolites by Carbon Monoxide as an IR Probe Molecule"
Advances in Catalysis, **47** (2002) 307-511.
138. **K. Hadjiivanov**, B. Tsyntsarski, E. Ivanova, D. Klissurski and Ts. Marinova
"FTIR Mechanistic Studies of the Selective catalytic Reduction of NO_x by Methane and Ethane over Supported Cobalt Catalysts"
Surface and Interface Analysis, **32** (2001) 205-209.
139. **K. Hadjiivanov**, V. Avreyska, G. Tzvetkov, P. Stefanov, C. Chupin, C. Mirodatos and Ts. Marinova
"Selective Catalytic Reduction of NO_x by Methane over Co/ ZrO_2 Catalysts"
Surface and Interface Analysis, **32** (2001) 175-178.
140. A. Milushev and **K. Hadjiivanov**
"FTIR Study of CO and NO_x Adsorption and Co-adsorption on Cu/silicalite-1"
Physical Chemistry Chemical Physics, **3** (2001) 5337-5341.
141. **K. Hadjiivanov**, H. Knözinger, E. Ivanova and L. Dimitrov
"FTIR Study of Low-temperature CO and $^{15}N_2$ adsorption on a CaNaY zeolite: Formation of Site-specified $Ca^{2+}(CO)_3$ and $Ca^{2+}(^{15}N_2)_3$ Complexes"
Physical Chemistry Chemical Physics, **3** (2001) 2531-2536.
142. **K. Hadjiivanov** and H. Knözinger
"FTIR Study of the CO and NO Adsorption and Co-adsorption on a Cu/ SiO_2 Catalyst: Probing the Oxidation State of Copper"
Physical Chemistry Chemical Physics, **3** (2001) 1132-1137.
143. E. Ivanova, **K. Hadjiivanov**, D. Klissurski, M. Bevilacqua, T. Armaroli and G. Busca
"FTIR Study of Species Arising after NO Adsorption and $NO + O_2$ Co-adsorption on CoY: Comparison with Co-ZSM-5"
Microporous and Mesoporous Materials, **46** (2001) 299-309.
144. **K. Hadjiivanov** and H. Knözinger
"Formation of $Ca^{2+}(CO)_3$ Complexes during Low-temperature CO Adsorption on CaNaY Zeolite"
Journal of Physical Chemistry B, **105** (2001) 4531-4534.

145. **K. Hadjiivanov**, E. Ivanova and D. Klissurski
"Site-specified and Complex-specified Formation of Geminal Species during Adsorption of Small Molecules on Cationic Sites"
Catalysis Today, **70** (2001) 73-82.
146. M. Mihaylov, **K. Hadjiivanov** and H. Knözinger
"Formation of Ni(CO)₄ during the Interaction between CO and Silica-supported Nickel Catalyst: An FTIR Spectroscopy Study"
Catalysis Letters, **76** (2001) 59-63.
147. **K. Hadjiivanov**, Tz. Venkov and H. Knözinger
"FTIR Spectroscopic Study of CO Adsorption on Cu/SiO₂: Formation of New Types of Copper Carbonyls"
Catalysis Letters, **75** (2001) 55-59.
148. **K. Hadjiivanov** and J. C. Lavalley
"FTIR Spectroscopic Study of CO Adsorption on Monoclinic Zirconia of Different Hydroxylation Degrees"
Catalysis Communications, **2** (2001) 129-133.
149. **K. Hadjiivanov**, P. Concepcion and H. Knözinger
"Analysis of Oxidation States of Vanadium in Vanadia-Titania Catalysts by the IR Spectra of Adsorbed NO"
Topics in Catalysis, **11/12** (2000) 123-138.
150. S. Kuba, **K. Hadjiivanov** and H. Knözinger
"Reactivity of the NO_x Surface Species Formed after Co-adsorption of NO + O₂ on a WO₃/ZrO₂ Catalyst: An FTIR Spectroscopic Study"
Studies in Surface Science and Catalysis, **130** (2000) 1259-1264.
151. M. Mihaylov, **K. Hadjiivanov** and D. Klissurski
"Effect of Passivation on the Controlled Preparation of Silica-supported Nickel Catalysts by Means of Successive Adsorption and Reduction"
Proceedings of the IX International Symposium on Heterogenous Catalysis, Varna, 2000, pp. 387-392.
152. B. Tsyntsarski, D. Klissurski and **K. Hadjiivanov**
"Adsorption of CO and NO on Co²⁺ Ions Dispersed on Various Supports: An Infrared Spectroscopic Study"
Proceedings of the IX International Symposium on Heterogenous Catalysis, Varna, 2000, pp. 133-138.
153. **K. Hadjiivanov** and H. Knözinger
"Species Formed After NO Adsorption and NO + O₂ co-adsorption on TiO₂: An FTIR Spectroscopic Study"
Physical Chemistry Chemical Physics, **2** (2000) 2803-2806.
154. **K. Hadjiivanov** and H. Knözinger
"FTIR Study of Low-temperature CO Adsorption on Cu-ZSM-5: Evidence of the Formation of Cu²⁺(CO)₂ Species"
Journal of Catalysis, **191** (2000) 480-495.

155. **K. Hadjiivanov**
"Identification of Neutral and Charged NO_x Surface Species by IR spectroscopy"
Catalysis Reviews – Science and Engineering, **42** (2000) 71-144.
156. **K. Hadjiivanov**
"Use of Overtones and Combination Modes for the Identification of Surface NO_x Anionic Species by IR Spectroscopy"
Catalysis Letters, **68** (2000) 157-161.
157. E. Vassileva, **K. Hadjiivanov**, T. Stoychev and Ch. Daiev
"Chromium Speciation Analysis by Solid-phase Extraction on a High Surface Area TiO₂"
Analyst, **125** (2000) 693-698.
158. **K. Hadjiivanov**, B. Tsyntsarski and T. Nikolova
"Stability and Reactivity of the Nitrogen-oxo Species formed after NO Adsorption and NO + O₂ Coadsorption on Co-ZSM-5: an FTIR Spectroscopic Study"
Physical Chemistry Chemical Physics, **1** (1999) 4521-4528.
159. **K. Hadjiivanov**, P. Massiani and H. Knözinger
"Low Temperature CO and ¹⁵N₂ Adsorption and Co-adsorption on Alkali Cation Exchanged EMT Zeolites: an FTIR Study"
Physical Chemistry Chemical Physics, **1** (1999) 3831-3838.
160. **K. Hadjiivanov** and L. Dimitrov
"IR Spectroscopy Study of CO and NO_x Adsorption on a Cu/Zr-HMS Catalyst"
Microporous and Mesoporous Materials, **27** (1999) 49-56.
161. **K. Hadjiivanov**, M. Mihaylov, D. Klissurski, P. Stefanov, N. Abadjieva, E. Vassileva and L. Mintchev
"Characterization of Ni/SiO₂ Catalysts Prepared by Successive Deposition and Reduction of Ni²⁺ ions"
Journal of Catalysis, **185** (1999) 314-323.
162. P. Concepcion, **K. Hadjiivanov** and H. Knözinger
"Low-temperature CO Adsorption on V-containing Aluminophosphates: an FTIR Study"
Journal of Catalysis, **184** (1999) 172-179.
163. **K. Hadjiivanov** and H. Knözinger
"FTIR Study of the Low-temperature Adsorption and Co-adsorption of CO and N₂ on NaY Zeolite: Evidence of Simultaneous Coordination of Two Molecules to One Na⁺ Site"
Chemical Physics Letters, **303** (1999) 513-520.
164. **K. Hadjiivanov**, H. Knözinger, B. Tsyntsarski and L. Dimitrov
"Effect of Water on the Reduction of NO_x with Propane on Fe-ZSM-5. An FTIR Mechanistic Study"
Catalysis Letters, **62** (1999) 35-40.
165. **K. Hadjiivanov** and H. Knözinger
"FTIR Spectroscopic Evidence of Formation of Geminal Dinitrogen Species during the Low-temperature N₂ Adsorption on NaY Zeolites"
Catalysis Letters, **58** (1999) 21-26.

166. **K. Hadjiivanov**, B. M. Reddy and H. Knözinger
"FTIR Study of Low-temperature Adsorption and Co-adsorption of ^{12}CO and ^{13}CO on a $\text{TiO}_2\text{-SiO}_2$ Mixed Oxide"
Applied Catalysis A, **188** (1999) 355-360.
167. M. Mihaylov, **K. Hadjiivanov**, N. Abadjieva, D. Klissurski and L. Mintchev
"Characterization of Zirconia-supported Nickel Catalysts Prepared by Multiple Ion-Exchange"
Studies in Surface Science and Catalysis, **118** (1998) 295-304.
168. **K. Hadjiivanov**
"IR Study of CO and NO_x Sorption on Ag-ZSM-5"
Microporous and Mesoporous Materials, **24** (1998) 41-49.
169. **K. Hadjiivanov** and H. Knözinger
"Low-temperature CO Adsorption on Ag^+/SiO_2 and Ag-ZSM-5: An FTIR Study"
Journal of Physical Chemistry B, **102** (1998) 10936-10940.
170. **K. Hadjiivanov**, M. Mihaylov, N. Abadjieva and D. Klissurski
"Characterization of Ni/ TiO_2 Catalysts Prepared by Successive Adsorption-reduction of Ni^{2+} ions"
Journal of the Chemical Society, Faraday Transactions, **94** (1998) 3711-3716.
171. **K. Hadjiivanov**
"IR Study of CO and H_2O Coadsorption on $\text{Pt}^{n+}/\text{TiO}_2$ and Pt/TiO_2 Samples"
Journal of the Chemical Society, Faraday Transactions, **94** (1998) 1901-1905.
172. **K. Hadjiivanov**, J.-C. Lavalley, J. Lamotte, F. Mauge, J. Saint-Just and M. Che
"FTIR Study of CO Interaction with Ru/ TiO_2 Catalysts"
Journal of Catalysis, **176** (1998) 415-425.
173. **K. Hadjiivanov**, J. Saussey, J.-L. Freysz and J.-C. Lavalley
"FT-IR Study of $\text{NO} + \text{O}_2$ Co-adsorption on H-ZSM-5: Re-assignment of the 2133 cm^{-1} Band to NO^+ Species"
Catalysis Letters, **52** (1998) 103-108.
174. **K. Hadjiivanov** and D. Klissurski
"Use of Carbon Monoxide as an IR Probe Molecule for Testing Metal Oxide Surfaces without Sample Activation"
Bulgarian Chemical Communication, **30** (1998) 159-167.
175. **K. Hadjiivanov**
"FTIR Study of CO and NH_3 Coadsorption on TiO_2 (rutile)"
Applied Surface Science, **135** (1998) 331-338.
176. **K. Hadjiivanov**, J. Lamotte and J.-C. Lavalley
"FTIR Study of Low-Temperature CO Adsorption on Pure and Ammonia-precovered TiO_2 (Anatase)"
Langmuir, **13** (1997) 3374-3381.
177. B. Djonev, B. Tsyntsarski, D. Klissurski and **K. Hadjiivanov**
"IR Spectroscopic Study of NO_x Adsorption and $\text{NO}_x\text{-O}_2$ Coadsorption on $\text{Co}^{2+}/\text{SiO}_2$ Catalysts"
Journal of the Chemical Society, Faraday Transactions, **93** (1997) 4055-4063.

178. E. Vassileva and **K. Hadjiivanov**
"Determination of Trace Elements in AR Grade Alkali Salts after Preconcentration by Column Solid-Phase Extraction on TiO₂ (Anatase)"
Fresenius Journal of Analytical Chemistry, **357** (1997) 881-885.
179. **K. Hadjiivanov**, M. Kantcheva and D. Klissurski
"IR Spectroscopic Study of CO Adsorption and CO + H₂O Coadsorption on Cu-ZSM-5 and Cu-SiO₂ Catalysts"
Annual of Sofia University "St. Kl. Ohridski". Faculty of Chemistry, **89** (1997) 237-248.
180. M. Kantcheva, **K. Hadjiivanov** and D. Klissurski
"Selective Catalytic Reduction of Nitrogen Oxides by Ammonia: An IR Spectroscopic Study of the Process Mechanism"
Proceedings of the VIII International Symposium on Heterogeneous Catalysis, Varna, 1996, Part. 1, pp. 371-376.
181. M. Kantcheva, **K. Hadjiivanov**, F. Audry and J.-C. Lavalley
"FT-IR Spectroscopic Study of Acetone Adsorption on TiO₂ (Anatase)"
Proceedings of the VIII International Symposium on Heterogeneous Catalysis, Varna, 1996, Part. 1, pp. 31-36.
182. **K. Hadjiivanov**, M. Kantcheva and D. Klissurski
"IR Study of CO Adsorption on Cu-ZSM-5 and CuO/SiO₂ Catalysts: σ - and π -Components of the Cu⁺-CO Bond"
Journal of the Chemical Society, Faraday Transactions, **92** (1996) 4595-4600.
183. **K. Hadjiivanov** and D. Klissurski
"Surface Chemistry of Titania (Anatase) and Titania-supported Catalysts"
Chemical Society Reviews, **25** (1996) 61-69.
184. D. Klissurski, N. Petridis, N. Abadzhieva and **K. Hadjiivanov**
"MoO₃ Supported on Montmorillonite Type Pillared Clays: Characterization, Surface Acidity and Catalytic Properties towards the Oxidation of Methanol"
Applied Clay Science, **10** (1996) 451-459.
185. **K. Hadjiivanov**, D. Klissurski, G. Ramis and G. Busca
"Fourier Transform IR Study of NO_x Adsorption on a CuZSM-5 DeNO_x Catalyst"
Applied Catalysis B, **7** (1996) 251-267.
186. E. Vassileva, I. Proinova and **K. Hadjiivanov**
"Solid-Phase Extraction of Heavy Metal Ions on a High Surface Area Titanium Dioxide (Anatase)"
Analyst, **121** (1996) 607-612.
187. E. Vassileva, B. Varimezova and **K. Hadjiivanov**
"Column Solid-Phase Extraction of Heavy Metal Ions on a High Surface Area CeO₂ as a Pre-concentration Method for Trace Determination"
Analytica Chimica Acta, **336** (1996) 141-150.
188. **K. Hadjiivanov**, D. Klissurski and V. Bushev
"IR Spectroscopic Study of NO₂ Adsorption on Chromia"
Journal of the Chemical Society, Faraday Transactions, **91** (1995) 149-153.

189. **K. Hadjiivanov**, O. Saur, J. Lamotte and J.-C. Lavalley
"FT-IR Spectroscopic Study of NH₃ and CO Adsorption and Coadsorption on TiO₂ (Anatase)"
Zeitschrift für Physikalische Chemie (Munich), **187** (1994) 281-300.
190. **K. Hadjiivanov** and G. Busca
"Surface Chemistry of Oxidized and Reduced Chromia: A Fourier Transform Infrared Spectroscopy Study"
Langmuir, **10** (1994) 4534-4541.
191. **K. Hadjiivanov**, V. Bushev, M. Kantcheva and D. Klissurski
"Infrared Spectroscopy Study of the Species Arising during NO₂ Adsorption on TiO₂ (Anatase)"
Langmuir, **10** (1994) 464-471.
192. **K. Hadjiivanov**, J. Saint-Just, M. Che, J.-M. Tatibouët, J. Lamotte and J.-C. Lavalley
"Preparation and Characterization of Multiple Ion-exchanged Pt/TiO₂ Catalysts"
Journal of the Chemical Society, Faraday Transactions., **90** (1994) 2277-2281.
193. E. Vasileva, **K. Hadjiivanov** and P. Mandjukov
"Adsorption of Cr⁶⁺ Oxo Anions on Pure and Peroxide-modified TiO₂ (Anatase)"
Colloids & Surfaces, **A90** (1994) 9-15.
194. E. Vassileva, **K. Hadjiivanov** and P. Mandjukov
"Preliminary Study of the Applicability of Some Metallic Oxides (MeO₂) as Sorbents for Preconcentration of Trace Elements in the Analytical Chemistry"
Analytical Laboratory, **3** (1994) 147-151.
195. M. Kantcheva, A. Davydov and **K. Hadjiivanov**
"Spectroscopic Study of the Nature of Vanadium-oxo Species Adsorbed on Anatase"
Journal of Molecular Catalysis, **81** (1993) L25-L30.
196. M. Kantcheva, V. Bushev and **K. Hadjiivanov**
"Nitrogen Dioxide Adsorption on Deuteroylated Titania (Anatase)"
Journal of the Chemical Society, Faraday Transactions, **88** (1992) 3087-3089.
197. M. Kantcheva, **K. Hadjiivanov** and D. Klissurski
"An IR Spectroscopy Study of the State and Localization of Vanadium-oxo Species Adsorbed on TiO₂ (Anatase)"
Journal of Catalysis, **134** (1992) 299-310.
198. F. Lange, **K. Hadjiivanov**, H. Schmelz and H. Knözinger
"Low-Temperature Infrared Study of Carbon Monoxide Adsorption on Sulfated Titania"
Catalysis Letters, **16** (1992) 97-107.
199. M. Kantcheva, **K. Hadjiivanov**, A. Davydov and A. Budneva
"Low-Temperature CO Adsorption on Cu²⁺/TiO₂ Catalysts"
Applied Surface Science, **55** (1992) 49-55.
200. V. Bushev, **K. Hadjiivanov**, M. Kantcheva and D. Klissurski
"An IR Spectroscopic Study of NO₂-NH₃ Interaction on TiO₂ (Anatase)"
Zeitschrift für Physikalische Chemie (Munich), **173** (1991) 217-223.

201. **K. Hadjiivanov** and D. Klissurski
"Theoretical Study of the Formation of Adsorbed Dicarbonyl Species"
Reaction Kinetics and Catalysis Letters, **44** (1991) 229-235.
202. **K. Hadjiivanov**, M. Kantcheva, D. Klissurski and A. Davydov
"Two-Dimensional Oxide Phases Formed on TiO₂ (Anatase) after Adsorption of Cations"
Proceedings of the VII International Symposium on Heterogeneous Catalysis, Bourgas, 1991, pp. 157-162.
203. **K. Hadjiivanov**, E. Vassileva, M. Kantcheva and D. Klissurski
"IR Spectroscopy Study of Silver Ions Adsorbed on Titania (Anatase)"
Materials of Chemistry and Physics, **28** (1991) 367-377.
204. **K. Hadjiivanov**, D. Klissurski, M. Kantcheva and A. Davydov
"State and Localization of Cobalt, Nickel and Copper Ions Adsorbed on Titania (Anatase)"
Journal of the Chemical Society, Faraday Transactions, **87** (1991) 907-911.
205. **K. Hadjiivanov**, D. Klissurski, G. Busca and V. Lorenzelli
"Benzene-Ammonia Coadsorption on TiO₂ (Anatase)"
Journal of the Chemical Society, Faraday Transactions, **87** (1991) 175-178.
206. M. Kantcheva and **K. Hadjiivanov**
"Adsorption of Vanadium-oxo Species on Pure and Peroxide-treated TiO₂ (Anatase)"
Chemical Communications, **27** (1991) 1057-1058.
207. D. Klissurski, **K. Hadjiivanov**, M. Kantcheva and L. Gyurova
"Study of Peroxide-modified Titanium Dioxide (Anatase)"
Journal of the Chemical Society, Faraday Transactions, **86** (1990) 385-388.
208. **K. Hadjiivanov**, D. Klissurski and A. Davydov
"Study of Phosphate-modified TiO₂ (Anatase)"
Journal of Catalysis, **116** (1989) 498-505.
209. V. Nikolov, D. Klissurski, A. Anastasov and **K. Hadjiivanov**
"Study of the Effect of Water Vapour on a Vanadia-Titania Catalyst for Partial Oxidation of o-Xylene"
Hungarian Journal of Industrial Chemistry, **17** (1989) 229-233.
210. **K. Hadjiivanov**, D. Klissurski and A. Davydov
"Effect of the Surface Structure of Metal Oxides on Their Adsorption Properties"
Journal of the Chemical Society, Faraday Transactions 1, **84** (1988) 37-40.
211. D. Klissurski, **K. Hadjiivanov** and A. Davydov
"Infrared Study of the Nature and Localization of Some Forms of Oxygen Adsorbed on the α -Chromia Surface"
Journal of Catalysis, **111** (1988) 421-424.
212. **K. Hadjiivanov**, A. Davydov and D. Klissurski
"An IR Spectroscopic Study of the Surface Acidity of Sulphated Titania (Anatase)"
Bulgarian Chemical Communications, **21** (1988) 516-525.

213. **К. Хаджииванов**, Д. Клисурски и М. Кънчева
"Приложение на инфрачервената спектроскопия за охарактеризиране на повърхностите на окисни катализатори и адсорбенти"
Химия и индустрия, **60** (1988) 258-262 и 323-227.
214. **К. Хаджииванов** и А. Давыдов
"ИК-спектроскопическое изучение поверхности TiO_2 -анатаза, модифицированного серной кислотой"
Кинетика и катализ, **29** (1988) 460-465.
215. **К. Хаджииванов**, А. Давыдов и Д. Клисурски
"ИК-спектроскопическое изучение природы активных центров на поверхности анатаза"
Кинетика и катализ, **29** (1988) 161-167.
216. V. Nikolov, D. Klissurski and **K. Hadjiivanov**
"Deactivation of a V_2O_5 - TiO_2 Catalyst for the Oxidation of o-Xylene to Phthalic Anhydride"
Studies in Surface Science and Catalysis, **34** (1987) 173-182.
217. V. Nikolov, D. Klissurski and **K. Hadjiivanov**
"Study of the Change of a Vanadia - Titania Catalyst for the Oxidation of o-Xylene to Phthalic Anhydride during the Initial Period of its Industrial Exploitation"
Proceedings of the VI International Symposium on Heterogeneous Catalysis, Sofia, 1987, Part. 1, pp. 468-473.
218. **K. Hadjiivanov**, D. Klissurski and A. Davydov
"A Model of the Titania (Anatase) Surface"
Proceedings of the VI International Symposium on Heterogeneous Catalysis, Sofia, 1987, Part. 1, pp. 365-370.
219. S. Arpadjan, **K. Chadjiivanov** and D. Tsalev
"Eine Methode zur Optimierung von Flammenatomabsorptionsverfahren"
Spectrochimica Acta B, **40** (1985) 697-700.