

IVAN NIKOLOV JUCHNOVSKI

Academician, Professor, D.Sc., Master of Chemical Engineering

Biographical and professional data



Birth date: 12 August 1937
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Education:

1961 – *Master of Chemical Engineering* (organic synthesis, pharmaceuticals and polymers).
Higher Institute of Chemical Technology, Sofia

Scientific degrees:

1968 – *Ph.D.* in organic chemistry, Institute of Organic Chemistry with Centre of Phytochemistry of the Bulgarian Academy of Sciences, Sofia
1982 – *D.Sc.* in theoretical organic chemistry, Institute of Organic Chemistry with Centre of Phytochemistry of the Bulgarian Academy of Sciences, Sofia.

Positions occupied

1961–1963 – *Assistant Professor* at the Organic Chemistry Department at the Higher Institute of Chemical Technology, Sofia
1963–1972 – *Junior scientist* at the Institute of Organic Chemistry with Centre of Phytochemistry of the Bulgarian Academy of Sciences, Sofia
1972–1984 – *Senior scientist* at the Institute of Organic Chemistry with Centre of Phytochemistry of the Bulgarian Academy of Sciences, Sofia
1963–1987 – *Lecturer* at the Department of Organic Chemistry, St. Kliment Ohridski University of Sofia
1979 – *Founder and Head* of the Laboratory of Structural Organic Analysis at the Institute of Organic Chemistry with Centre of Phytochemistry of the Bulgarian Academy of Sciences, Sofia
1984 – *Professor* of Physical Methods in the Organic Chemistry at the Institute of Organic Chemistry with Centre of Phytochemistry of the Bulgarian Academy of Sciences, Sofia
1989–1994 – *Director* of the Institute of Organic Chemistry with Centre of Phytochemistry of the Bulgarian Academy of Sciences, Sofia
1992–1999 – *President* of the National Science Fund at the Ministry of Education and Science
1990–1996 – *Vice President* of the Bulgarian Academy of Sciences
1991–1992 – *Chief Scientific Secretary* and *Vice President* of the Bulgarian Academy of Sciences
1996–2000, 2000–2004, 2004–2008 – *President* of the Bulgarian Academy of Sciences

Honorary titles, awards, orders, medals

1970, 1972 – *Honorary awards*

– *For contributions to the technical progress* by the State Committee for Science and Technical Progress

– *Dimitrov Award* for the creation of a technology for bright acidic copper electroplating

1980 – *Honorary Inventor Title*

1989 – *Corresponding Member* of the Bulgarian Academy of Sciences

1997 – *Academician (Full Member)* of the Bulgarian Academy of Sciences

1997 – *Marin Drinov Honorary sign* of the Bulgarian Academy of Sciences

1997 – *Honorary citizen* of the town of Sevlievo

1997 – *Honorary sign with a blue band* of St. Kliment Ohridski University of Sofia

1998 – Included in the *Golden Book* of inventors and innovators of the Patent Institute of the Republic of Bulgaria

– *Prof. Asen Zlatarov Honorary medal* of the Union of Chemists in Bulgaria

2001 – Honorary medal of the Federation of the Science-Technical Unions in Bulgaria

2004 – Honorary sign of the Union of Scientists in Bulgaria

– *Stara Planina Order* – first grade of the Republic of Bulgaria

– *Doctor Honoris Causa* of:

Paisiy Khilendarski University of Plovdiv;

Chernorizets Khrabar Free University of Varna;

University of Chemical Technology and Metallurgy, Sofia;

University of Kharkov, Republic of Ukraine;

– *St. St. Cyril and Methodius Order* – neck-line trimming of the Republic of Bulgaria;

– *Member of the European Academy of Sciences and Arts*, Paris;

– *Member of the Leibnitz Society*, Berlin.

Research activities and professional interests

The research fields of Academician I. N. Juchnovski are the electronic and steric structures of the conjugated organic compounds, and of their anionic derivatives (unstable species, intermediates in important organic reactions), studied by methods of vibrational spectroscopy, quantum chemistry and correlational analysis. His main basic research contributions, known world wide are in the field of the structures and infrared spectra of radical-anions and carbanions, as well as in the correlation analysis. The phenomena *Abnormally strong electronic interaction between functional groups* and *Abnormally high intensities in the infrared spectra of negative ions* are discovered by Academician I. N. Juchnovski; their theoretical interpretation is also given by him.

Academician I. N. Juchnovski has published more than 150 scientific articles, monographs and review papers. He has been supervisor of more than 15 Ph.D. students.

He has implemented a number of applied research achievements on highly productive and ecologically clean technologies for the general and specialized galvanotechnics, as well as for the microelectronics. Out of his 18 inventions, 15 have already been implemented as basic technologies for both the copper and zinc electroplating in more than one hundred large enterprises in Bulgaria and abroad.

LIST OF PUBLICATIONS

1. Certain relations between the physicochemical properties of the homologue compounds,
I. Juchnovski,
Ann. Inst. Chim. Technol., **9**, 153 (1962) (in Bulgarian).
2. Reaction of 2,3-diaryl and 2-aryl-3-alkylindenones with nitrogen oxides,
B. Aleksiev, Ch. Ivanov, I. Juchnovski,
Dokl. AN SSSR, **149**, 1315 (1963) (in Russian).
3. Stability and spectroscopic properties of intermediate products of the nitration of certain 2,3-disubstituted indenones,
B. Aleksiev, Ch. Ivanov, I. Juchnovski,
Dokl. AN SSSR, **150**, 89 (1963) (in Russian).
4. Infrared spectra of 2,3-disubstituted indenones. Carbonyl group frequencies in the infrared spectra of 2,3-disubstituted indenones,
Ch. Ivanov, I. Juchnovski,
Ann. Inst. Chim. Technol., **11**, 1 (1964) (in Bulgarian).
5. Some additions to the conjugation coefficients method,
I. Juchnovski,
Izv. Inst. Org. Chem., **1**, 109 (1964) (in Bulgarian).
6. Infrared spectra of 2,3-disubstituted indenones. II. Phenyl group frequencies in the region near 700 cm^{-1} ,
Ch. Ivanov, I. Juchnovski,
Ann. Inst. Chim. Technol., **12**, 71 (1965) (in Bulgarian).
7. Infrared spectra of 2,3-disubstituted indenones. III. Phenyl group frequencies in the $900\text{--}1700\text{ cm}^{-1}$ region,
Ch. Ivanov, I. Juchnovski,
Ann. Inst. Chim. Technol., **12**, 81 (1965) (in Bulgarian).
8. Resonance energy calculations of complex molecules on the basis of the conjugation coefficients method,
I. Juchnovski,
C. R. Acad. Bulg. Sci., **18**, 817 (1965) (in Russian).
9. Use of the conjugation coefficients method in the study of certain conjugated systems,
I. Juchnovski,
Izv. Inst. Org. Chem., **2**, 85 (1965) (in Russian).
10. Über die Frequenz der $\text{C}\equiv\text{N}$ Gruppe konjugierter Nitrile in ihren IR Spektren.
I. Juchnovski, B. Jordanov, M. Agova,
Commun. Depart. Chem. Bulg. Acad. Sci., **2**, 13 (1965).
11. Polar effects transmission in conjugated systems. Frequency and integrated intensity of the $\text{C}\equiv\text{N}$ group in the infrared spectra of substituted *trans*- α -cyanostilbenes,
I. Juchnovski,
Dokl. AN SSSR, **168**, 1117 (1966) (in Russian).
12. Über den Zusammenhang zwischen Bindungsordnung und Frequenz in den IR-Spektren Konjugierter Nitrile und Aldehyde,
I. Juchnovski,
C. R. Acad. Bulg. Sci., **19**, 1151 (1966).
13. Untersuchung der Schwächung des polaren Effekte der Substituenten auf die Frequenz der ($\text{C}\equiv\text{N}$) - Gruppe in Zimtnitrilen und deren Derivativen,
I. Juchnovski,
C. R. Acad. Bulg. Sci., **19**, 743 (1966).
14. Certain peculiarities of the of the resonance effects on the characteristic frequencies of the $\text{C}=\text{O}$ and $\text{C}\equiv\text{N}$ groups in the infrared spectra of molecules,
I. Juchnovski,
Teoret. Eksp. Khim., **3**, 123 (1967) (in Russian).
15. Frequency of the nitrile group in the infrared spectra of some carbanions,
I. Juchnovski,
Teoret. Eksp. Khim., **3**, 410 (1967) (in Russian).
16. Steric hindrance to the conjugation and its estimate by the nitrile group frequency in the infrared spectra of α,β -diarylacrylonitriles,
I. Juchnovski,
Zh. Strukt. Khim., **8**, 544 (1967) (in Russian).
17. Frequenz der Carbonylgruppe und ihres ersten Obertons in den infraroten Spektren der substituierten Zimtaldehyde und Benzaldehyde,

- I. Juchnovski,
C. R. Acad. Bulg. Sci., **20**, 33 (1967).
18. Über einige Gesetzmässigkeiten in der Übertragung der polaren Effekte der Substituenten auf die Frequenz der Nitrilgruppe,
I. Juchnovski,
C. R. Acad. Bulg. Sci., **20**, 97 (1967).
 19. Infrarote Spektren und Syntese einiger 2,3-disubstituierter 1,1'-Dicyanobenzofulvene.
I. Juchnovski, C. Ivanov, J. Vladovska,
C. R. Acad. Bulg. Sci., **20**, 449 (1967).
 20. Physical Methods in the Organic Chemistry. A Textbook for University Students,
A. Trifonov, I. Juchnovski,
Sofia University, Sofia, 1968, (in Bulgarian).
 21. Variation in the substituent effects on the infrared characteristic frequencies as a result of the lengthening of the conjugated system,
I. Juchnovski,
Dokl. AN SSSR, **186**, 878 (1969) (in Russian).
 22. Use of the correlation of the nitrile group infrared frequencies with the bond orders to estimate the steric hindrances to the conjugation,
I. Juchnovski, Ts. Popov,
Commun. Depart. Chem. Bulg. Acad. Sci., **2**, 373 (1969) (in Russian).
 23. IR-Spektren der Anion-Radikale von aromatischen Mononitrilen und Elektronenübergänge zwischen Anion-Radikalen und neutralen Molekülen,
I. Juchnovski, Ch. Tsvetanov, I. Panayotov,
Monatsh. Chem., **100**, 1980 (1969).
 24. Über die Nitrierung substituierter Indenone. 6. Struktur der Zwischenprodukte,
B. Aleksiev, P. Nisanjan, I. Juchnovski,
Monatsh. Chem., **100**, 1400 (1969).
 25. Übertragung des Polareffektes auf die Frequenzen der Carbonylgruppe in den trans-Zimtsäuren und anderen verwandten Systemen,
I. Juchnovski, N. Christov,
C. R. Acad. Bulg. Sci., **22**, 1401 (1969).
 26. A study of some orotic acid derivatives and analogues by Hueckel's method of molecular orbitals. I. A theoretical study of the active site of orotidine-5'-phosphate pyrophosphorylase,
J. Kaneti, E. Golovinsky, I. Juchnovski, D. Genchev,
J. Theor. Biol., **26**, 19 (1970).
 27. A study of some orotic acid derivatives and analogues by Hueckel's method of molecular orbitals. II. Analogues of orotic acid in the reaction with phosphoribosyl pyrophosphate,
E. Golovinsky, J. Kaneti, I. Juchnovski, D. Genchev,
J. Theor. Biol., **26**, 29 (1970).
 28. Auswertung der sterischen Hinderung von α,β -Diarylacrylnitrilen durch Korrelation polarographischer und HMO-LCAO - Angaben,
I. Juchnovski, Ts. Popov,
Monatsh. Chem., **100**, 337 (1970).
 29. Elektronenstruktur und Eigenschaften einiger Beta-dicarbonyl Verbindungen. I. Struktur und Elektrinenspektren von 2-Aryliden-1,3-indandionen,
J. Kaneti, I. Juchnovski,
Commun. Depart. Chem. Bulg. Acad. Sci., **3**, 83 (1970).
 30. Electronic substituent effects and carbonyl stretching frequencies of 2-arylmethylene-1,3-indandiones,
J. Kaneti, I. Juchnovski,
Tetrahedron, **26**, 4397 (1970).
 31. Über die IR-Spektren der dinegativen Ionen einiger polycyclics Mononitrile und Elektronenübergänge zwischen Ionen und neutralen Molekülen,
I. Juchnovski, Ch. Tsvetanov, I. Panayotov,
Monatsh. Chem., **101**, 1271 (1970).
 32. IR-Spektren der Ketylen einiger aromatischer Ketone und Elektroneübergänge zwischen Ketyl- und neutralen Keton- Molekülen,
I. Juchnovski, I. Raschkov, I. Panayotov,
Monatsh. Chem., **101**, 1712 (1970).
 33. Vinyl polymerisation, initiated by metal complexes of aromatic nitriles,
I. Panayotov, Ch. Tsvetanov, I. Juchnovski,

- Eur. Polymer J.*, **6**, 1625 (1970).
34. A model (MMO LCAO) investigation on the influence of the structure of the conjugated nitriles on the intensity on the infrared absorption band of the nitrile group,
I. Juchnovski, C. Velev,
Commun. Depart. Chem. Bulg. Acad. Sci., **4**, 333 (1971) (in Russian).
 35. Substituent polar effects on the integral intensity of the C≡N group in some conjugated systems,
I. Juchnovski, D. Dumanov, L. Mincheva,
Commun. Depart. Chem. Bulg. Acad. Sci., **4**, 39 (1971) (in Russian).
 36. Electronic structure of the rotational isomers of furfural,
I. Juchnovski, J. Kaneti,
Tetrahedron, **27**, 4269 (1971).
 37. Etude de mecanisme de la polymerisation amorcée par les anion-radicaux et les bianions de cetones aromatiques a l'aide de la spectroscopie infrarouge,
I. Panayotov, I. Rashkov, I. Juchnovski,
Eur. Polymer J., **7**, 749 (1971).
 38. Frequencies of the cyano group in the IR-Spectra of free, electrochemically generated anion-radicals of some aromatic nitriles,
I. Juchnovski, I. Binev,
C. R. Acad. Bulg. Sci., **24**, 483 (1971).
 39. Infrared spectral data on strong intramolecular electron interaction in some anion-radicals containing CN group,
I. Juchnovski, I. Binev,
Chem. Phys. Lett., **12**, 40 (1971).
 40. Relation between the electronic structure and infrared frequencies of the cyano group in alkali-metal complexes of some substituted benzonitriles,
I. Juchnovski, I. Binev,
J. Mol. Struct., **7**, 490 (1971)
 41. Study (SCF, CI) on the intra-molecular charges transfer during excitation of n-substituted pyridine ions,
N. Tyutyulkov, I. Juchnovski, K. Davarski,
C. R. Acad. Bulg. Sci., **25**, 51 (1972).
 42. Frequency of the nitrile group and electronic structure of the carbanions of some secondary saturated nitriles,
I. Juchnovski, I. Binev,
C. R. Acad. Bulg. Sci., **26**, 659 (1973).
 43. Infrared and ultraviolet spectral study of some substituted trans- α -cyanostilbenes,
I. Juchnovski, I. Binev,
Commun. Depart. Chem. Bulg. Acad. Sci., **6**, 595 (1973).
 44. The dependence of some characteristic frequencies of 2-arylmethylene-1,3-indanediones on their electronic structure. Steric effects and carbonyl coupling,
I. Juchnovski, J. Kaneti,
Commun. Depart. Chem. Bulg. Acad. Sci., **6**, 615 (1973).
 45. Infrared spectra and structure of carbanions. III. Hammett study of the frequencies of the nitrile groups in intermediates formed by nucleophilic addition to trans- α -cyanostilbenes,
I. Juchnovski, I. Binev,
Tetrahedron Lett., 3645 (1974).
 46. Infrared spectroscopic study on the deoxygenation of aromatic nitrile-N-oxides on their electrochemical reduction,
I. Juchnovski, G. Andreev,
Trav. Sci. Univ. Plovdiv, **13**, 143 (1975) (in Bulgarian).
 47. Infrared spectra and structure of carbanions. V. Assignment of the nitrile group infrared bands of the phenylacetone nitrile and acetonitrile lithium derivatives,
I. Juchnovski, I. Binev,
J. Organomet. Chem., **99**, 1 (1975).
 48. Assignment of the infrared stretching frequencies of the nitro group in some nitroaromatic compounds and their ¹⁵N labeled derivatives,
I. Juchnovski, G. Andreev,
C. R. Acad. Bulg. Sci., **29**, 1637 (1976).
 49. Infrared spectral data on the structure of enamino-nitrile anions and the base catalysed dimerization of some saturated nitriles,
I. Binev, R. Todorova, I. Juchnovski,
C. R. Acad. Bulg. Sci., **29**, 1301 (1976).
 50. Infrared spectra and structure of carbanions. IV. Carbanions - intermediates in nucleophilic addition reaction to α,β -diaryl-cyanoethylenes,

I. Binev, I. Juchnovski,
Commun. Depart. Chem. Bulg. Acad. Sci., **9**, 33 (1976).

- Z. Naturforsch.*, **33b**, 557 (1978).
69. Optical spectra and electronic structure of anion-radicals. XII. IR study of the anion-radicals of N-substituted phthalimides and their isotope labelled derivatives,
I. Juchnovski, I. Binev, A. Fattah Nazir, J. Tsenov,
Commun. Depart. Chem. Bulg. Acad. Sci., **12**, 500 (1979).
 70. Carbonyl group frequency in IR spectra of carbanions containing ethoxycarbonyl group,
I. Juchnovski, A. Fattah Nazir, I. Binev,
C. R. Acad. Bulg. Sci., **32**, 39 (1979)
 71. Nitrile frequency and intensity-structure relationships of *trans*-1,2-diaryl-acrylonitriles; L.F.E.R. and quantum chemical approaches,
I. Binev, J. Kaneti, J. Tsenov, R. Kuzmanova, I. Juchnovski,
Commun. Depart. Chem. Bulg. Acad. Sci., **12**, 228 (1979).
 72. Semiempirical calculation of force fields for molecules containing carbon-nitrogen bonds,
I. Juchnovski, J. Dimitrova, J. Kaneti,
Commun. Depart. Chem. Bulg. Acad. Sci., **12**, 97 (1979).
 73. Spectroscopic and theoretical study of arylmethylene malononitriles. II. Frequencies and intensities of the nitrile groups: L.F.E.R. and Huckel MO approaches,
I. Binev, D. Vitanov, I. Juchnovski, J. Kaneti,
Commun. Depart. Chem. Bulg. Acad. Sci., **12**, 162 (1979).
 74. Etude infrarouge sur la structure d'entités anioniques comprenant de groupes caractéristiques,
I. Juchnovski, I. Binev,
Organometalliques Fonctionnels ambident. Rec. Comm., Colloques Franco-Bulgare, Tryavna, 1980, p. 144.
 75. IR spectra and structure of carbanions. XVIII. A semiempirical study of carbanions of cyanoacetic acid derivatives,
J. Kaneti, A. Fattah Nazir, I. Binev, V. Radomirska, I. Juchnovski,
J. Mol. Struct., **68**, 11 (1980).
 76. IR spectra and structure of carbanions. XIX. Anions containing ester, amide and carboxylato groups,
I. Juchnovski, A. Fattah Nazir, M. Sahatchieva, J. Kaneti, I. Binev,
Commun. Depart. Chem. Bulg. Acad. Sci., **13**, 269 (1980).
 77. L.F.E.R. and simple HMO approaches to the study of the stretching frequencies of the nitro group in neutral and anionic nitrobenzenes,
I. Juchnovski, G. Andreev,
Commun. Depart. Chem. Bulg. Acad. Sci., **13**, 166 (1980).
 78. Trends in the refining technologies of the copper electroplating,
S. Rashkov, D. Stoichev, L. Mirkova, I. Pojarliev, I. Juchnovski,
Proc. III Int. Conf. Corrosion Prevention, Warszawa, 1980, p. 107 (in Russian).
 79. Transmission of substituents' polar effect to frequency of hydroxyl group in cinnamic acid,
I. Juchnovski, J. Vladovska,
C. R. Acad. Bulg. Sci., **33**, 71 (1980).
 80. Effects of neutral and anionic substituents on the carbonyl stretching bands of substituted benzophenones,
I. Juchnovski, Ts. Kolev, I. Binev,
Spectrosc. Lett., **14**, 763 (1981).
 81. IR spectra and structure of carbanions. XX. Strong ν_{CN} vibrational coupling in sodium malononitrile, its derivatives and isotopomers,
I. Juchnovski, V. Radomirska, I. Binev,
Commun. Depart. Chem. Bulg. Acad. Sci., **14**, 147-155 (1981).
 82. 1,4-Benzodiazepine. 7. Über den Mechanismus der polarographischen Reduktion einiger Benzodiazepiniumbromide,
P. Kasandschieva, D. Mondeschka, I. Juchnovski, I. Nikolov,
Arch. Pharm., **314**, 493 (1981).
 83. L.F.E.R. approach to the effects of neutral and charged substituents on IR frequencies and intensities. I. Substituted benzonitriles, determination of constants of anionic substituents,
I. Binev, R. Kuzmanova, J. Kaneti, I. Juchnovski,
Commun. Depart. Chem. Bulg. Acad. Sci., **14**, 470 (1981).
 84. L.F.E.R. approach to the effects of neutral and anionic substituents on IR frequencies and intensities. II. Substituted benzophenones,
I. Binev, Ts. Kolev, I. Juchnovski,
Commun. Depart. Chem. Bulg. Acad. Sci., **14**, 341 (1981).
 85. Constantes des substituents anioniques,
I. Binev, I. Juchnovski,
Organometalliques fonctionnels Rec. Commun., Coll. Franco-Bulgare C.N.R.S., Paris, 1982, p. 77.

86. Determination of constants of anionic substituents based on nitrile infrared frequencies and intensities, I. Binev, R. Kuzmanova, J. Kaneti, I. Juchnovski, *J. Chem. Soc. Perkin Trans. II*, 1533 (1982).
87. IR Spectra of Cyano and Isocyano Group, I. Juchnovski, I. Binev, In: *The Chemistry of Functional Group, Suppl. C.*, S. Patai and Z. Rappoport (Eds), John Wiley, New York, 1983, Chapt. 4, pp. 107-135.
88. Infrared spectra and structure of carbanions. XXII. Carbanions of *p*- and *m*-nitrophenyl nitromethanes, I. Juchnovski, G. Andreev, *Commun. Depart. Chem. Bulg. Acad. Sci.*, **15**, 339 (1982).
89. Effects of neutral and anionic substituents on the carbonyl stretching bands of substituted methylbenzoates, P. Wassileva, I. Binev, I. Juchnovski, *Spectrochim. Acta*, **39A**, 709 (1983).
90. Infrared spectra and structure of reduction products of *p*- and *m*-dinitrobenzenes and some ¹⁵N-isotope-labelled dinitrobenzenes, I. Juchnovski, G. Andreev, *C. R. Acad. Bulg. Sci.*, **36**, 911 (1983).
91. IR-Spektroskopische Untersuchungen von Anion-Radikalen. XII. Anion- Radikale aromatischer Nitroverbindungen, I. Juchnovski, G. Andreev, *Commun. Depart. Chem. Bulg. Acad. Sci.*, **16**, 389 (1983).
92. IR-Spektren und Struktur von Carbanionen. XXIII. Carbanionen von arylaliphatischen Nitroverbindungen, I. Juchnovski, G. Andreev, *Commun. Depart. Chem. Bulg. Acad. Sci.*, **16**, 402 (1983).
93. C-N stretching and NO₂ deformation vibrations coordinate analysis of *m*-dinitrobenzene, *m*-dinitrobenzene-d₄, G. Andreev, B. Jordanov, I. Juchnovski, B. Schrader, *J. Mol. Struct.*, **115**, 375 (1984).
94. L.F.E.R. approach to the effects of neutral and anionic substituents on the CO bands of ring-substituted ethylbenzoates and acetophenones, I. Binev, P. Vassileva, Ts. Kolev, I. Juchnovski, *J. Mol. Struct.*, **114**, 1984, 371 (1984).
95. Normal coordinate analysis of *m*-dinitrobenzene-d₀, *m*-dinitrobenzene-d₄ and *m*-dinitrobenzene-(¹⁵N,¹⁵N), G. Andreev, B. Schrader, H. Takahashi, D. Bougeard, I. Juchnovski, *Can. J. Spectrosc.*, **29**, 145 (1984).
96. Vibrational spectra of *m*-dinitrobenzene, *m*-dinitrobenzene-d₄ and *m*-dinitrobenzene-(¹⁵N,¹⁵N), G. Andreev, B. Schrader, H. Takahashi, D. Bougeard, I. Juchnovski, *Can. J. Spectrosc.*, **29**, 139 (1984).
97. Infrared spectra and structure of products formed by electron transfer on some substituted acrylonitriles, I. Juchnovski, J. Tsenov, I. Binev, *J. Mol. Struct.*, **129**, 249 (1985).
98. L.F.E.R. approach to the effects of neutral and anionic substituents on infrared frequencies and intensities. IV. Substituted ethyl benzoates, I. Binev, A. Fattah Nazir, P. Vassileva, I. Juchnovski, *Commun. Depart. Chem. Bulg. Acad. Sci.*, **18**, 22 (1985).
99. Vibrational assignment of benzophenone and some of its isotopic species in the solid phase, Ts.Kolev, B. Nikolova, B. Jordanov, I. Juchnovski, *J. Mol. Struct.*, **129**, 1 (1985).
100. Effects of neutral and anionic substituents on the carbonyl stretching bands of ring-substituted acetophenones, I. Binev, Ts. Kolev, I. Juchnovski, *Can. J. Chem.*, **63**, 3149 (1985).
101. Infrared spectra of the anion-radicals of benzophenone and some of its isotopic isomers, I. Juchnovski, Ts. Kolev, I. Rashkov, *Spectrosc. Lett.*, **18**, 171 (1985).
102. Infrared spectra and structure of the anion-radicals of substituted benzophenones, I. Juchnovski, Ts. Kolev, *Spectrosc. Lett.*, **18**, 481 (1985).
103. Infrared spectra and configuration of anion radical and dianion of benzil and benzil-¹⁸O, I. Juchnovski, Ts. Kolev, *Spectrosc. Lett.*, **19**, 529 (1986).
104. Infrared study of anthraquinone-anion-radical and its ¹⁸O labelled isomer,

- I. Juchnovski, Ts. Kolev,
Spectrosc. Lett., **19**, 1183-1193 (1986)
105. Synthesis of molybdenum silica and cobalt-molybdenum silica catalysts and their catalytic activity in the hydrodesulphurization of thiophen,
A. Spozhakina, N. Kostova, I. Juchnovski, D. Shopov, T. Yurieva, T. Shochireva,
Appl. Catal., **39**, 333 (1988).
 106. Some systematic deviations of the IR group frequencies from their correlations with substituent constants,
I. Juchnovski, J. Tsenov, J. Dimitrova, I. Binev,
Commun. Depart. Chem. Bulg. Acad. Sci., **23**, 502 (1990).
 107. CNDO/2 analysis of the constants of anionic substituents, determined on the basis of infrared frequencies and intensities,
I. Juchnovski, J. Dimitrova, I. Binev,
C. R. Acad. Bulg. Sci., **44**, 41 (1991).
 108. The vibrational spectra of 9-fluorenone and some of its isotopic isomers,
Ts. Kolev, I. Juchnovski,
Spectrosc. Lett., **24**, 1023 (1991).
 109. Structure of N-(4-cyanophenyl-phenyl)methylene aniline,
H. Preut, P. Bleckmann, Ts. Kolev, I. Juchnovski,
Acta Crystallogr., **C48**, 754 (1992).
 110. Structure of 2-cyanobenzophenone,
H. Preut, Ts. Kolev, P. Bleckmann, I. Juchnovski,
Acta Crystallogr., **C48**, 938 (1992).
 111. Crystal structure of 2-(4-nitrophenyl)-1-phenylethanone,
H. Preut, Ts. Kolev, P. Bleckmann, I. Juchnovski,
Acta Crystallogr., **C48**, 1152 (1992).
 112. Crystal structure of 1,4-dibenzoylbenzene,
Ts. Kolev, H. Preut, P. Bleckmann, I. Juchnovski,
Acta Crystallogr., **C48**, 1715 (1992).
 113. Crystal structure of 2-(4-methylphenyl)-1H-indene-1,3(2H)-dione,
Ts. Kolev, H. Preut, P. Bleckmann, I. Juchnovski,
Acta Crystallogr., **C48**, 1547 (1992).
 114. Unperturbed NO₂ stretching frequencies in the vibrational spectra of 1,4-dinitrobenzene,
G. Andreev, I. Juchnovski,
Appl. Spectrosc., **46**, 1304 (1992).
 115. Reaction of phthalic anhydride with substituted dibenzoylketones: a novel synthesis of some substituted 5-hydroxy-6-arylbenzo(a)fluorenones,
I. Juchnovski, V. Aleksiev,
C. R. Acad. Bulg. Sci., **45**, 53 (1992).
 116. Infrared spectra and transmission of substituent effect through the arylazomethine groups in aromatic Schiff bases,
I. Juchnovski, V. Ognyanova, G. Andreev,
Spectrosc. Lett., **26**, 447 (1993).
 117. Vibrational assignment of benzil and its oxygen-18 substituted derivative,
Ts. Kolev, I. Juchnovski,
Spectrosc. Lett., **26**, 1 (1993).
 118. Infrared spectra of phthalic anhydride and its oxygen-18 substituted derivative,
I. Juchnovski, E. Velcheva, Ts. Kolev,
Spectrosc. Lett., **26**, 17 (1993).
 119. Infrared spectra of benzophenone-ketyls. effects of meta and para-substituents on frequencies. correlation of ν_{CO} of substituted benzophenone-ketyls with the Hueckel P_{CO} bond order,
I. Juchnovski, Ts. Kolev, B. Stamboliyska,
Spectrosc. Lett., **26**, 67 (1993).
 120. Vibrational assignment of N-phenylphthalimide and ¹⁵N-phenylphthalimide,
Ts. Kolev, I. Juchnovski,
Spectrosc. Lett., **26**, 207 (1993).
 121. Infrared spectra of aromatic Schiff base electron transfer products,
I. N. Juchnovski, V. Ognyanova, G. N. Andreev,
Spectrosc. Lett., **27**, 1299 (1994).
 122. σ^+ Constants of charged substituents,
I. G. Binev, E. A. Velcheva, V. B. Radomirska, I. N. Juchnovski,
C. R. Acad. Bulg. Sci., **47**, 33 (1994).

123. IR spectra and structure of ethyl cyanoacetate and of its carbanion: an *ab initio* force field treatment, B. A. Stamboliyska, E. A. Velcheva, Y. I. Binev, I. N. Juchnovski, *C. R. Acad. Bulg. Sci.*, **47**, 69 (1994).
124. Substituent effects on the isocyano group infrared frequencies and intensities of substituted phenyl isocyanides: the LFER approach, I. N. Juchnovski, J. A. Tsenov, *Spectrosc. Lett.*, **28**, 211 (1995).
125. On the validity of the constants of ionic substituents: substituent effects on the cyano stretching frequencies and intensities of *trans*- α -phenyl- β -arylacrylonitriles, I. G. Binev, E. A. Velcheva, I. N. Juchnovski, *Spectrochim. Acta*, **A51**, 1871 (1995).
126. Infrared spectra and structure of phenylacetonitrile and of its carbanion: an *ab initio* force field treatment, I. G. Binev, J. A. Tsenov, E. A. Velcheva, I. N. Juchnovski, *J. Mol. Struct.*, **344**, 205 (1995).
127. The *ab initio* force field treatment of the IR spectra and structure of 2-Acetyl-3,3-bis(dimethylamino)acrylonitrile: a strongly polarized ethylene, I. G. Binev, J. A. Tsenov, E. A. Velcheva, Y. I. Binev, I. Juchnovski, *C. R. Acad. Bulg. Sci.*, **48**, No. 1, 65 (1995).
128. Vibrational assignment of N-benzylphthalimide and ^{15}N -benzylphthalimide, Ts. Kolev, I. Juchnovski, *J. Mol. Struct.*, **349**, 377 (1995).
129. Crystal structure of (\pm)-*threo*-hydroxy-2,3-diphenylpropanoic acid dimethylamide, Ts. Kolev, H. Preut, P. Bleckmann, I. Juchnovski, *Acta Crystallogr.*, **C51**, 1169 (1995).
130. Crystal structure of (\pm)-*threo*-hydroxy-2,3-diphenylpropanoic acid methyl ester, Ts. Kolev, H. Preut, P. Bleckmann, I. Juchnovski, *Acta Crystallogr.*, **C51**, 1350 (1995).
131. L-(+)- α -bromobenzeneacetic acid (-)-menthyl ester, Ts. Kolev, H. Preut, L. Koniczek, P. Bleckmann, I. Juchnovski, M. Mladenova, *Acta Crystallogr.*, **C51**, 1634 (1995).
132. Quantum-chemical study of the relation between electronic structure and IR spectra of neutral molecules, anion-radicals and dianions of aromatic nitriles, Y. Dimitrova, I. Juchnovski, *Spectrosc. Lett.*, **28**, 937 (1995).
133. Infrared spectra and structure of alkane- and cycloalkanecarbonitriles and of their carbanions: an *ab initio* force field treatment, I. N. Juchnovski, J. A. Tsenov, I. G. Binev, *Spectrochim. Acta Part A*, **52**, 1145 (1996).
134. Infrared spectra and structure of the isomeric (cyanophenyl)acetonitriles and of their carbanions: an *ab initio* force field treatment, I. G. Binev, J. A. Tsenov, E. A. Velcheva, V. B. Radomirska, I. N. Juchnovski, *J. Mol. Struct.*, **378**, 133 (1996).
135. Quantum-chemical investigation of the electronic structure of the ionic derivatives of aromatic Schiff bases, I. Juchnovski, V. Ognyanova, B. Stamboliyska, G. N. Andreev, *C. R. Acad. Bulg. Sci.*, **50**, 51 (1997).
136. The infrared spectra and structure of 2-cyano-3-phenylpropenenitrile and of its sodium-metoxide adduct: an *ab initio* GF treatment, I. N. Juchnovski, Y. I. Binev, B. A. Stamboliyska, I. G. Binev, *C. R. Acad. Bulg. Sci.*, **50**, 61 (1997).
137. The substituent effects on the isocyano group infrared frequencies and intensities of substituted phenyl isocyanides: an *ab initio* GF treatment, J. A. Tsenov, I. N. Juchnovski, *C. R. Acad. Bulg. Sci.*, **50**, 35 (1997).
138. The infrared spectra and structure of benzylidenemalonitrile, its cyanide, metoxide and heptyamine adducts: experimental and *ab initio* studies, I. G. Binev, Y. I. Binev, B. A. Stamboliyska, I. N. Juchnovski, *J. Mol. Struct.*, **435**, 235 (1997).
139. Vibrational assignment of *para*-dimethylaminobenzil and its ^{18}O substituted derivative, V. Radomirska, Ts. Kolev, I. Juchnovski, *J. Mol. Struct.*, **408**, 409 (1997).

140. *Ab initio* treatment of vibrational spectra and structure of free tricyanoethenolate anion and of its lithium and silver contact ion pairs,
I. N. Juchnovski, Y. I. Binev,
C. R. Acad. Bulg. Sci., **50**, 51 (1997).
141. IR spectral and structural changes of phenyl isocyanides and benzonitriles, accompanying their conversion into anion-radicals: *ab initio* and experimental studies,
J. A. Tsenov, I. G. Binev, I. N. Juchnovski
C. R. Acad. Bulg. Sci., **51**, 57 (1998).
142. Experimental and *ab initio* studies of IR spectra and structure of *trans*-benzylidenecyanacetamide and of its potassium cyanide (¹⁴N and ¹⁵N) adducts,
E. Velcheva, I. Bineva, I. Juchnovski,
C. R. Acad. Bulg. Sci., **51**, 41 (1998).
143. Vibrational spectra of 2-phenyl-indane-1,3-dione, its isotopic labelled derivatives and the corresponding carbanions,
Ts. Kolev, E. Velcheva, I. Juchnovski,
Spectrochim. Acta Part A, **54**, 1083 (1998).
144. Vibrational spectra of 3-benzylidenephthalide and its ¹⁸O labelled derivative,
Ts. Kolev, E. Velcheva, I. Juchnovski,
Spectrochim. Acta Part A, **55**, 2477 (1999).
145. Vibrational spectra and structure of N-(4-cyanobenzylidene)-aniline, its ¹⁵N and D₅ isotopomers and their monomeric dianions: an experimental and *ab initio* study,
V. Ognyanova, G. N. Andreev, B. Stamboliyska, I. N. Juchnovski,
J. Mol. Struct., **513**, 139 (1999).
146. IR spectra and structure of 2,5-pyrrolidinedione (succinimide) and of its nitranion: experimental and *ab initio* MO studies,
B. Stamboliyska, Y. Binev, V. Radomirska, J. Tsenov, I. Juchnovski,
J. Mol. Struct., **516**, 237 (2000).
147. The formation and isomerisation of sodium methoxide adducts of cinnamylidenemalononitrile, followed by IR spectra and *ab initio* force field calculations,
Y. Binev, I. Binev, I. Juchnovski,
J. Mol. Struct. (Theochem), **532**, 31 (2000).
148. A new approach to the detection and determination of *o*-chlorobenzylidene-malononitrile (CS) and its chemical relatives,
I. G. Binev, Y. I. Binev, I. N. Juchnovski,
Spectrosc. Lett., **35**, 285 (2002).
149. Correlation analysis of experimental vs. *ab initio* IR frequencies and intensities,
I. G. Binev, B. A. Stamboliyska, P. J. Vassileva-Boyardjieva, Y. I. Binev, E. A. Velcheva, J. A. Tsenov,
Ch. Ts. Petkov, I. N. Juchnovski,
Bulg. Chem. Commun., **34**, 170 (2002).
150. IR studies in the substituted benzaldehyde series provide a new definition of sigma-plus constants of ionic substituents,
E. A. Velcheva, I. N. Juchnovski, I. G. Binev,
Spectrochim. Acta Part A, **59**, 1745 (2003).
151. Experimental and computational studies on the IR spectral and structural variations arising from the conversion of (2,4,6-trimethylphenyl)acetonitrile into carbanion,
M. K. Georgieva, N. B. Nedelchev, I. N. Juchnovski,
Bulg. Chem. Commun., **37**, 234 (2005).

INVENTIONS

by Academician I. N. Juchnovski and colleagues

1. A flux line for printed plates, Invention Certificate No. 14923/23.10.1969 (in Bulgarian).
2. An electrolysis cell for infrared spectroscopy, Invention Certificate No. 16928/25.03.1971 (in Bulgarian).
3. An additive with brightness forming and smoothing effect for bright acidic copper electroplating, Invention Certificate No. 20924/06.06.1973 (in Bulgarian).
4. A method for preparation of disodium-3-3'-dithiobis-propanesulfonate, Invention Certificate No. 19454/06.08.1973 (in Bulgarian).

5. A method for purification of disodium-3-3'-dithiobis-propanesulfonate, Invention Certificate No. 21484/30.05.1974 (in Bulgarian).
6. A safraninic polymer and method for its preparation, Invention Certificate No. 26832/30.05.1974 (in Bulgarian).
7. A sulfuric acid containing electrolyte for copper depositing in the production of two- and polylayer printed plates, Invention Certificate No. 20476/07.06.1974 (in Bulgarian).
8. Polysafranines with modified end groups, Invention Certificate No. 31897/1975.
9. An additive to electrolyte for acidic bright copper plating, Invention Certificate No. 27504/1978 (in Bulgarian).
10. An additive for acidic bright copper electroplating, Invention Certificate No. 21755/1975 (in Bulgarian).
11. A method for identification and quantitative determination of *o*-chloro-benzylidenemalononitrile, Invention Certificate No. 27283/12.01.1982 (in Bulgarian).
12. An electrolyte for bright cyanide- and chloride-free zinc plating, Invention Certificate No. 27305/13.04.1978 (in Bulgarian).
13. An alkaline electrolyte for bright zinc plating, Invention Certificate No. 43490/07.05.1979 (in Bulgarian).
14. A complex additive to weakly acidic electrolytes for zinc plating, Invention Certificate No. 54683/01.02.1983 (in Bulgarian).
15. An additive to sulfuric acid containing electrolyte for bright copper plating, Invention Certificate No. 32654/1978 (in Bulgarian).
16. An electrolyte for copper plating, USSR Invention Certificate No. 1058313/01.08.1983 (in Russian).
17. Complex additives and electrolytes to deposit bright coatings of zinc alloys. Invention Certificate No. 63360/12.06.1989 (in Bulgarian).
18. A reagent for extracting metals, Invention Certificate No. 69448/16.05.1985 (in Bulgarian).

SELECTED PUBLICATIONS

ON PROBLEMS OF THE SCIENCE AND THE BULGARIAN ACADEMY OF SCIENCES

A. I. N. Juchnovski, *About Bulgarian Science and the Bulgarian Academy of Sciences, 13 Memorable Years, 1989–2003*, Collection of Public Texts of the Author; Compiler V. G. Christova, Marin Drinov Academic Publishing House, Sofia, 2003, 268 pp., (in Bulgarian).

This book-collection has appeared after consecutive discussions in the scientific community about the impact of science in Bulgaria, its financial collapse, the rapid decrease in the number of people engaged in science nowadays, its underestimated contributions when compared to the new active initiatives of the European Union for a united European Research Area.

A total of 91 selected publications were gathered in this book. Some of them had been printed in the newspapers and some had been presented to various audiences. Acad. I. Juchnovski was participating actively in the events engaged in the development and protection of the scientific research in Bulgaria since 1989.

We have tried to select texts, which are of significant importance in order to create a better understanding of the author's ideas about the role of science in the country, during a critical situation; about the necessary government policy towards advanced scientific developments; about the different approaches to promote scientific research. Other included texts comprise sharp remarks against the hypocritical behaviour or pseudoscience, which the author does not accept at all. There are also publications that suggest deep and emotional devotion to all Bulgarian traditions and national characteristics, especially those that incorporate the country's legacy connected with the national will for education, science and progress. Following this process, we managed to prepare a collection of articles tracing back the development of the Bulgarian Academy of Sciences, Bulgarian science and education for the last 13 years. The book is written by a man who was involved in the events and, who knew the trends in science and university education, which he analyzed professionally. All of these texts represent the many difficulties and achievements, opportunities and struggles, that both the Bulgarian Academy of Sciences and the whole scientific community in Bulgaria have gone through during the period of complicated transition in our country, which has been looking for a bridge to pass over for some time now.

In this sense, the book will probably provoke an interest in researchers, direct participants in the events, and also in the educated reader, who wants to learn more about how Bulgarian science has survived and fought during the last 13 years (1989–2003).

B. Selected more recent publications on the same problems:

1. Preface (7–12 pp.) to the book by Academician E. P. Kruglyakov (Russian Acad. Sci.), Swindlers Posing as 'Scientists' (On the lying doctrines of certain modern scandalous pseudo-scientists), Marin Drinov Academic Press, Sofia, 2003, 297 pp (in Bulgarian).
2. The scientist must think honestly, Interview in the daily newspaper *Zemya*, 21.05.2003 (in Bulgarian).
3. Speech for the celebration of 24 May (the day of the Slavonic alphabet), 22.05.2003.
4. The nation must start to see scientific achievements, Interview in the daily newspaper *Duma*, 24.05.2003 (in Bulgarian).
5. People keep on going despite politics, Interview in the daily newspaper *Standart*, 26.05.2003 (in Bulgarian).
6. We have elected very good scientists, Interview in the daily newspaper *Trud*, 22.06.2003 (in Bulgarian).
7. The science is a productive force only within a working market economy, Interview in the daily newspaper *Sega*, 02.07.2003 (in Bulgarian).
8. The Bulgarian Academy of Sciences does not sanction scientists for media appearances, Interview in the daily newspaper *Sega*, 10.11.2003 (in Bulgarian).
9. The Bulgarian Academy of Sciences will do for the country what others are not capable of doing. In the evening you must be tired of creative work, not of conspiracy, Interview in the daily newspaper, *Duma*, 30.03.2004 (in Bulgarian).
10. Let us think more about Bulgaria, Interview, monthly chronicle *Az Buki*, 1–13.04.2004 (in Bulgarian).
11. Let us do what others cannot, Attachment Sofiyants in the daily newspaper *Trud*, 23.04.2004 (in Bulgarian).
12. A day of intellectual inspiration and unity, Article in the newspaper *Za bukvite*, special edition, 24.05.2004 (in Bulgarian).
13. The government funds given for science are enough only for salaries, Interview in the daily newspaper *Sega*, 16.10.2004 (in Bulgarian).
14. The main purpose of Europe is to build a community of knowledge, Interview in the daily newspaper *Cherno more*, Varna, 08.11.2004 (in Bulgarian).
15. The antipode of knowledge, Interview in the daily newspaper *Duma*, 30.11.2004 (in Bulgarian).
16. The Bulgarian Secret Services were pressing us to treat cancer with arsenic, Interview in the daily newspaper *24 hours*, 30.11.2004 (in Bulgarian).
17. Fortune-tellers want to become academicians, Interview in the daily newspaper *Standart*, 18.12.2004 (in Bulgarian).
18. On the Pseudoscience. Brochure, edition of „Chernorizets Hrabar”, Varna Free University, ”Issue of Academic Forum”, January, 2005 (in Bulgarian).
19. A report presented at the Forum “*Science for Bulgaria*”, 13–14.05.2005 (in Bulgarian).
20. The science is the engine for the economy, Interview in the daily newspaper *Duma*, 19.05.2005 (in Bulgarian).
21. An interview for Vera Mutaftchieva’s new book, July 2005 (in Bulgarian).
22. An interview for Mira Mayer’s book about Jews in Bulgaria, 08.08.2005 (in Bulgarian).
23. The Bulgarian Academy of Sciences and Morocco grasshoppers, A reply by the Bulgarian Academy of Sciences administration to the article by Prof. D. Draganov in the daily newspaper *24 hours*, 10.01.2006 (in Bulgarian).
24. Has the Bulgarian Academy of Sciences developed the poison for Georgi Markov? Nonsense!, Interview in the daily newspaper *Trud*, 03.04.2006 (in Bulgarian).
25. Welcoming speech to the conference “*Science evaluation*”, published in the daily newspaper *Duma* on 31.10.2006 (in Bulgarian).
26. We have to cut live flesh off the Academy to reform it, Interview in the daily newspaper *Monitor*, 06.04.2007 (in Bulgarian).
27. Lying about history is not an European idea (on the occasion of the widely discussed book “*Batak*”), Article in the daily newspaper *Duma*, 26.04.2007 (in Bulgarian).
28. We jump from one puddle into another one, Interview in the daily newspaper *Trud*, 24.05.2007, (in Bulgarian).
29. Why do you abuse leading scientific institutions? Article in the daily newspaper *Politika*, 7–13.09.2007 (in Bulgarian).
30. A new migration wave is expected. Interview in the daily newspaper *Trud*, 27.12.2007 (in Bulgarian).
31. Introduction words for the opening of the National Conference “Directions of differentiation and integration of scientific knowledge, codes of scientific specialities and disciplinary organization of the research in Bulgaria”, 23–24.01.2008 (in Bulgarian).
32. I am fighting for a cause, not for a position. Interview in the daily newspaper *Duma*, 13.02.2008 (in Bulgarian).

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A. Popova