

Schriftenverzeichnis Georg Zundel

- [1] G. Zundel, H. Noller and G.-M. Schwab: *IR-Untersuchungen über Hydratation und Protonenbeweglichkeit in Ionenaustauschern*.
In: Z. Elektrochem., Ber. Bunsenges. **65**, 703-704 (1961).
- [2] G. Zundel, H. Noller and G.-M. Schwab: *Folien aus Polystyrol Sulfonsäure und ihren Salzen. I. Mitteilung: Herstellung und IR-Spektren mit Zuordnung*.
In: Z. Naturforschg. **16b**, 716-725 (1961).
- [3] G. Zundel, H. Noller and G.-M. Schwab: *Folien aus Polystyrol Sulfonsäure und ihren Salzen. II. Mitteilung: IR-Untersuchungen über Hydratation*.
In: Z. Elektrochem., Ber. Bunsenges. **66**, 122-129 (1962).
- [4] G. Zundel, H. Noller and G.-M. Schwab: *Folien aus Polystyrol Sulfonsäure und ihren Salzen. III. Mitteilung: Zum Verständnis der Natur des Hydronium-Ions*.
In: Z. Elektrochem., Ber. Bunsenges. **66**, 129-140 (1962).
- [5] G. Zundel, A. Murr and G.-M. Schwab: *Folien aus Polystyrol Sulfonsäure und ihren Salzen. IV. Mitteilung: IR-Küvette zur Untersuchung von Proben bei definiertem Dampfdruck*. In: Z. Naturforschg. **17a**, 1027-1029 (1962).
- [6] G. Zundel, A. Murr and G.-M. Schwab: *Folien aus Polystyrol Sulfonsäure und ihren Salzen. V. Mitteilung: IR-Banden des Hydratwassers an den Alkali- und Erdalkali-Metallionen*. In: Naturwissenschaften **50**, 17-18 (1963).
- [7] G. Zundel, A. Murr and G.-M. Schwab: *Folien aus Polystyrol Sulfonsäure und ihren Salzen. VI. Mitteilung: IR-Untersuchung der Be-, Al-, Ga-, In- und Tl-Form*.
In: Z. Physik. Chem. (Frankfurt) **35**, 199-204 (1962).
- [8] G. Zundel: *Infrarot-Tiefemperatur-Küvette*.
In: Chem.-Ing.Technik **35**, 306-309 (1963).
- [9] G. Zundel and G.-M. Schwab: *Foils of Polystyrenesulfonic Acid and its Salts. VIII. Low-Temperature Investigation of the Infrared Continuous Absorption Spectrum of Aqueous Acid Solutions*. In: J. Phys. Chem. **67**, 771-773 (1963).
- [10] G. Zundel: *Untersuchungen der Hydratation und Hydratstruktur in Abhängigkeit von der Wasserstoff-Brücken-Akzeptoreneigenschaft der Anionen mit Hilfe der IR Spektroskopie*. In: J. Strukt. Khimii (russ.) **6**, 384-386 (1965).

- [11] Th. Ackermann, G. Zundel and K. Zwernemann: *Infrarotspektroskopische Untersuchungen an Anionenaustauscherfolien aus quaterniertem Poly-p-dimethylaminostyrol*. In: Z. Physik. Chem. (Frankfurt) **49**, 331-334 (1966).
- [12] G. Zundel and A. Murr: *Die Kation-Wasser-Wechselwirkung, die Valenzschwingung und die Wasserstoff-Brücken-Donator-Eigenschaft der OH-Gruppen in den Wasserstoff-Brücken Hydratwasser-Anion*. In: Z. Physik. Chem. (Frankfurt) **54**, 49-58 (1967).
- [13] G. Zundel and A. Murr: *Die freien OH-Gruppen in konzentrierten wäßrigen Elektrolytlösungen - Eine infrarotspektroskopische Untersuchung an Polyelektrolyten*. In: Z. Naturforschg. **21a**, 1391-1394 (1966).
- [14] G. Zundel and A. Murr: *Infrarotspektroskopische Untersuchung zur Hydratation der Ionen der Übergangselemente*. In: Z. Physik. Chem. (Frankfurt) **54**, 59-67 (1967).
- [15] G. Zundel and A. Murr: *Nachweis der „zweiten“ Hydrathülle durch eine IR-spektroskopische Untersuchung von Polyelektrolyten*. In: Z. Physik. Chem. (Leipzig) **233**, 415-418 (1966).
- [16] G. Zundel and A. Murr: *Die Aufhebung der Entartung von Molekülschwingungen durch elektrostatische Felder in Infrarot-Spektren*. In: Z. Naturforschg. **21a**, 1640-1647 (1966).
- [17] G. Zundel and A. Murr: *Dissoziation, Ionenpaar und Leitfähigkeit - eine IR-Untersuchung an Polyelektrolyten*. In: Electrochim. Acta (London) **12**, 1147-1151 (1967).
- [18] G. Zundel, H. Metzger and I. Scheuing: *Assoziation von Säure-Gruppen über Wasserstoff-Brücken in Polyelektrolyten - eine IR-spektroskopische Untersuchung*. In: Z. Naturforschg. **22b**, 127-131 (1967).
- [19] G. Zundel and H. Metzger: *Bandenpaare im Infrarot-Spektrum und die Potentialverhältnisse in den Wasserstoff-Brücken assoziierter Säuregruppen*. In: Spectrochim. Acta (London) **23A**, 759-766 (1967).
- [20] E. G. Weidemann and G. Zundel: *Protonen-Dispersionskräfte und IR-Kontinuumsabsorption bei Säure- und Laugelösungen*. In: Z. Physik **198**, 288-303 (1967).
- [21] G. Zundel: *Die Umordnung der Bindungselektronen in den Anionen durch das Proton - Eine IR-spektroskopische Untersuchung von Polyelektrolyten*. In: Z. Naturforschg. **22a**, 199-203 (1967).

- [22] G. Zundel and A. Murr: *Etude spectroscopique de polyélectrolytes montrant l'influence du degré d'hydratation sur l'interaction ion - eau.*
In: J. Chimie Physique **66**, 246-248 (1969).
- [23] G. Zundel: *Herstellung und Infrarot-Spektren von Folien aus Polystyrol-Phosphinsäure und deren Na-Salz.* In: Kunststoff-Rundschau **15**, 166-171 (1968).
- [24] G. Zundel: *Herstellung und Infrarot-Spektren von Folien aus Polystyrol-Selenon-Säure, Polystyrol-Selenin-Säure und deren Salze.* In: Z. Naturforschg. **23b**, 119-125 (1968).
- [25] G. Zundel and H. Metzger: *Energiebänder der tunnelnden Überschuß-Protonen in flüssigen Säuren - eine IR-spektroskopische Untersuchung der Natur der Gruppierungen $H_5O_2^+$.* In: Z. Physik. Chem. (Frankfurt) **58**, 225-245 (1968).
- [26] G. Zundel and H. Metzger: *Die Hydratation der Polystyrol Sulfonsäure - eine IR-spektroskopische Untersuchung.*
In: Z. Physik. Chem. (Frankfurt) **59**, 225-241 (1968).
- [27] G. Zundel and H. Metzger: *Die Hydratation von sauren Polyelektrolyten verschiedener Stärke - eine infrarotspektroskopische Untersuchung.*
In: Z. Physik. Chem. (Leipzig) **240**, 50-64 (1969).
- [28] G. Zundel and H. Metzger: *Eine IR-spektroskopische Untersuchung der Natur der Gruppierung $H_9O_4^+$ in Säurelösungen.* In: Z. Naturforschg. **22a**, 1412-1414 (1967).
- [29] G. Zundel and H. Metzger: *Sättigungseffekt der Extinktion der Infrarot-Kontinuumsabsorption tunnelnder Protonen in Säurelösungen.*
In: Z. Physik. Chem. (Leipzig) **235**, 333-334 (1967).
- [30] G. Zundel and H. Metzger: *Kinetik der Sulfonierungsreaktion und die Gleichmäßigkeit der Verteilung der $-SO_3H$ -Gruppen in Polystyrol Sulfonsäure.*
In: Z. Physik. Chem. (Leipzig) **240**, 90-91 (1969).
- [31] W.-D. Mross and G. Zundel: *Die Herstellung von perdeutierten Verbindungen: Acetylchlorid- d_3 , Acetophenon- d_8 und Styrol- d_8 .*
In: Chem. Ber. **101**, 2865-2869 (1968).
- [32] W.-D. Mross and G. Zundel: *Schwingungsspektren von Derivaten des Benzol- d_6 . I. Verschieden deuterierte Acetophenone.*
In: Spectrochim. Acta (London) **26A**, 1097-1107 (1970).

- [33] W.-D. Mross and G. Zundel: *Schwingungsspektren von Derivaten des Benzol-d₆. II. Styrol-d₀ und Styrol-d₈*. In: Spectrochim. Acta (London) **26A**, 1109-1111 (1970).
- [34] W.-D. Mross and G. Zundel: *Schwingungsspektren von Derivaten des Benzol-d₆. III. Verschiedene deuterierte Derivate des Polystyrols*. In: Spectrochim. Acta (London) **26A**, 1113-1120 (1970).
- [35] G. Zundel and A. Murr: *Hydratation und hydrophobe Wechselwirkung der Ionen in Polyelektrolyten mit einer Folgerung bezüglich der biologischen Membranen*. In: Z. Naturforschg. **24b**, 375-377 (1969).
- [36] G. Zundel: *Hydratstruktur und zwischenmolekulare Wechselwirkung in Polyelektrolyten*. In: Angew. Chem. **81**, 507-518 (1969); Internat. Ed. **8**, 499-509 (1969).
- [37] G. Zundel: Monography: *Hydration and Intermolecular Interaction. Infrared Investigations with Polyelectrolyte Membranes*. Academic Press, New York, N.Y. (1969).
- [38] Th. Ackermann, K. Zwernemann and G. Zundel: *Infrarotspektroskopische Untersuchung der Ionenhydratation an Anionenaustauscherfolien aus quaterniertem Poly-p-dimethylaminostyrol*. In: Ber. Bunsenges. Physik. Chem. **73**, 446-452 (1969).
- [39] H. Strassmair, J. Engel and G. Zundel: *Binding of Alcohols to the Peptide CO-Group of Poly-L-Proline in the I and II Conformation. I. Demonstration of the Binding by Infrared Spectroscopy and Optical Rotatory Dispersion*. In: Biopolymers **8**, 237-246 (1969).
- [40] E. G. Weidemann and G. Zundel: *Field-dependent Mechanism of Anomalous Proton Conductivity and the Polarizability of Hydrogen Bonds with Tunneling Protons*. In: Z. Naturforschg. **25a**, 627-634 (1970).
- [41] G. Zundel and E. G. Weidemann: *Tunnel Frequency Dependence of the IR Continuous Absorption and the Proton Dispersion Forces*. In: J. Chem. Soc. Faraday Trans. **66**, 1941-1947 (1970).
- [42] I. Kampschulte-Scheuing and G. Zundel: *Tunnel Effect, Infrared Continuum and Solvate Structure in Aqueous and Anhydrous Acid Solutions*. In: J. Phys. Chem. **74**, 2363-2368 (1970).
- [43] G. Zundel and J. Mühlhngaus: *Tunneleffekt und Protonendispersionskräfte bei halbprotoniertem Poly-L-Histidin und Modellsstanzen*. In: Hoppe-Seyler's Z. Physiol. Chem. **351**, 138 (1970).

- [44] G. Zundel and J. Mühlhäuhaus: *Proton Dispersion Forces and Continuous Energy Level Distribution of Protons in the Hydrogen Bonds of Semi-protonated Poly-L-Histidine and with Model Substances*. In: Z. Naturforschg. **26b**, 546-555 (1971).
- [45] J. Mühlhäuhaus and G. Zundel: *Infrared Investigation of Poly-L-Histidine Structure Dependent on Protonation*. In: Biopolymers **10**, 711-719 (1971).
- [46] G. Zundel: *Wasserstoff-Brücken mit Tunnelproton - anomale Protonenleitfähigkeit - Infrarot-Kontinuum und Protonendispersionskräfte*. In: Allgem. Prakt. Chemie (Wien) **21**, 329-340 (1970).
- [47] G. Zundel and E. G. Weidemann: *Possible Mechanism of Proton Conductivity in Biological Membranes*. In: First Europ. Biophys. Congress **6**, 43-47 (1971).
- [48] E. G. Weidemann and G. Zundel: *Polarizability of Hydrogen Bonds and Correlations of Tunneling Protons*. In: First Europ. Biophys. Congress **6**, 49-54 (1971).
- [49] K. P. Hofmann and G. Zundel: *Quantitative Spectroscopy - Reproducible Production of Thin Layers on Supports from Solutions*. In: Rev. Sci. Instr. **42**, 1726-1727 (1971).
- [50] R. Janoschek, E. G. Weidemann, H. Pfeiffer and G. Zundel: *Extremely High Polarizability of Hydrogen Bonds*. In: J. Amer. Chem. Soc. **94**, 2387-2396 (1972).
- [51] R. Lindemann and G. Zundel: *Symmetry of Hydrogen Bonds, Infrared Continuous Absorption and Proton Transfer*. In: J. Chem. Soc. Faraday Trans. II **68**, 979-990 (1972).
- [52] G. Zundel, W. D. Lubos and K. Kölsenbeck: *Fermi Resonance of IR Vibrations in the $-NH_2$ Groups of Polynucleotides*. In: Canad. J. Chem. **49**, 3795-3798 (1971).
- [53] G. Zundel, W. D. Lubos and K. Kölsenbeck: *Proton Dispersion Forces - Secondary-Structure Stabilising Forces between the Hydrogen Bonds of the Polynucleotides*. In: Biophys. J. **12**, 1509-1514 (1972).
- [54] W. Seßler and G. Zundel: *IR Investigation of Extremely Strongly Polarizable Hydrogen Bonds: pK_a Dependence in the Case of Hydrated Solutions of Protonated Amines*. In: Z. Physik. Chem. (Frankfurt) **79**, 180-199 (1972).
- [55] W. Seßler and G. Zundel: *Extremely Strongly Polarizable Hydrogen Bonds in Purine Solutions*. In: Chem. Phys. Letters **14**, 356-357 (1972).

- [56] H. Noller, B. Mayerböck and G. Zundel: *Hydrogen Bonds of Extremely High Polarizability between Molecules Adsorbed on Silica Gel - an IR Investigation*. In: *Surface Science* **33**, 82-90 (1972).
- [57] G. Papakostidis and G. Zundel: *Polarizable Hydrogen Bond Formation and Ionic Interactions in Model Phospholipid Polar Head Molecules*. In: *Naturforschg.* **28b**, 323-330 (1973).
- [58] R. Janoschek, E. G. Weidemann and G. Zundel: *Calculated Frequencies and Intensities Associated with Coupling of the Proton Motion with the Hydrogen Bond Stretching Vibration in a Double Minimum Potential Surface*. In: *J. Chem. Soc. Faraday Trans II* **69**, 505-520 (1973).
- [59] D. Schiöberg and G. Zundel: *Very Polarizable Hydrogen Bonds in Solutions of Bases, having IR Absorption Continua*. In: *J. Chem. Soc. Faraday Trans. II* **69**, 771-781 (1973).
- [60] G. Zundel and E. G. Weidemann: *Polarization of Hydrogen Bonds of Hydration Water Molecules by Ion Fields*. In: *Z. Physik. Chem. (Frankfurt)* **83**, 327-329 (1973).
- [61] E. G. Weidemann and G. Zundel: *Influence of the Environment on Proton Transfer in Symmetrical Hydrogen Bonds*. In: *Z. Naturforschg.* **28a**, 236-245 (1973).
- [62] G. Zundel: *Monography: Hydration and Intermolecular Interaction - Infrared Spectroscopic Investigations of Polyelectrolyte Membranes [extended Russian edition of my monography (37)]*. Mir, Moskau (1972).
- [63] G. Papakostidis, G. Zundel and E. Mehl: *Na⁺ – K⁺-dependent Conformation Change of Proteins of Excitable Membranes*. In: *Biochim. Biophys. Acta* **288**, 277-281 (1972).
- [64] K. P. Hofmann and G. Zundel: *Intermolecular Interaction in Systems with Energy-Rich Phosphates. I. Stepwise Protonation of PO₄³⁻, ADP and ATP Salts - IR Investigations*. In: *Z. Naturforschg.* **29c**, 19-28 (1974). Erratum: *Z. Naturforschg.* 30c (1975).
- [65] K. P. Hofmann and G. Zundel: *Intermolecular Interaction in Systems with Energy-Rich Phosphates. II. Effect of the Protons Arising in Aqueous Hydrolysing ATP Solutions – IR Investigations*. In: *Z. Naturforschg.* **29c**, 29-35 (1974).
- [66] K. P. Hofmann and G. Zundel: *Large Hydration Structure Changes by Hydrolysing ATP*. In: *Experientia* **30**, 139-140 (1974).

[67] K. P. Hofmann and G. Zundel: *Ein Verfahren zur Herstellung von Schichten reproduzierbarer Dicke auf Trägern*. In: Ber. Bunsenges. Physik. Chem. **78**, 1244-1246 (1974).

[68] K. Kölkenbeck and G. Zundel: *The Significance of the 2'OH Group and the Influence of Cations on the Secondary Structure of the RNA Backbone*. In: Biophys. Struct. Mechanism **1**, 203-219 (1975).

[69] R. Herbeck and G. Zundel: *Influence of Temperature and Magnesium Ions on the Secondary Structure of tRNA^{Phe} and 23 S RNA – Infrared Investigations*. In: Biochim. Biophys. Acta **418**, 52-62 (1976).

[70] G. Zundel: *Influence of Cations on Secondary Structures of Macromolecules and Membranes – IR Investigations*. In: „Environmental Effects of Molecular Structure and Properties“, B. Pullman, Ed., Reidel Publ. Co., 1976, pp. 371-388.

[71] D. Schiöberg, K. P. Hofmann and G. Zundel: *Easily Polarizable Hydrogen Bonds and Hydration of Phosphate Ions in Aqueous Solutions Dependent on the Presence of H⁺ – IR Investigations*. In: Z. Physik. Chem. (Frankfurt) **90**, 181-188 (1974).

[72] I. Pernoll, U. Maier, R. Janoschek and G. Zundel: *Interpretation of the Raman Spectra of Aqueous Acid Solutions in Terms of the Polarizability of Hydrogen Bonds. I. HCl Solutions*. In: J. Chem. Soc. Faraday Trans. II **71**, 201-206 (1975).

[73] G. Zundel: *Easily Polarizable Hydrogen Bonds – Their Interactions with the Environment – IR Continuum and Anomalous Large Conductivity*. In: „The Hydrogen Bond - Recent Developments in Theory and Experiments“, Vol. II, Ch. 15, P. Schuster, G. Zundel and C. Sandorfy, Eds., North Holland Publ. Co., 1976, pp. 683-766.

[74] D. Schiöberg and G. Zundel: *The Influence of Neutral Salts on the Easily Polarizable Hydrogen Bond of H₅O₂⁺ Groupings in Acid Solutions*. In: Canad. J. Chem. **54**, 2193-2200 (1976).

[75] D. Schiöberg and G. Zundel: *H₅O₂⁺ and Other Easily Polarizable Hydrogen Bonds in Aqueous Solutions of H₂SO₄*. In: Z. Physik. Chem. (Frankfurt) **102**, 169-174 (1976).

[76] D. Schiöberg and G. Zundel: *Study of the Influence of Temperature on IR Continua of Easily Polarizable Hydrogen Bonds*. In: Chem. Phys. Letters **38**, 334-335 (1976).

[77] B. Brzezinski and G. Zundel: *„Symmetrical“ and Asymmetrical (NH \cdots N)⁺ Hydrogen Bonds*. In: J. Chem. Soc. Faraday Trans. II **72**, 2127-2137 (1976).

- [78] B. Brzezinski and G. Zundel: *Intramolecular Easily Polarizable Hydrogen Bonds with 1-Piperidine Carboxylic Acids*. In: Chem. Phys. Letters **44**, 521-525 (1976).
- [79] M. Matthies and G. Zundel: *Hydration and Self-association of ATP, ADP and their 1:1 Complexes with Mg²⁺ at various pH Values: Infrared Investigations*. In: J. Chem. Soc. Perkin Trans. II, 1824-1830 (1977).
- [80] M. Matthies and G. Zundel: *Phosphate-N Base Hydrogen Bonds Involving Proton Transfer with Reference to the Non-Enzymic Hydrolysis of ATP*. In: Biochem. Biophys. Res. Commun. **74**, 831-837 (1977).
- [81] M. Matthies and G. Zundel: *Nonenzymic Hydrolysis of ATP - Infrared Investigations of Intermolecular Interactions*. In: Bioinorganic Chemistry **10**, 109-123 (1979).
- [82] G. Zundel: *The Influence of Cations on the Conformation of Biological Membranes and Macromolecules - Infrared Investigations*. In: „Charged Gels and Membranes II“, E. Sélégny, Ed., Vol. II, Reinhold Reidel Publ. Co., Dordrecht, 1976, pp. 121-141.
- [83] B. Brzezinski and G. Zundel: *Anilides of 6-Methyl-Picolinic Acid N-Oxides - Infrared Investigations*. In: Z. Physik. Chem. (Frankfurt) **105**, 125-133 (1977).
- [84] B. Brzezinski and G. Zundel: *Intramolecular Easily Polarizable Hydrogen Bonds with Anilides of 1-Piperidine Carboxylic Acids*. In: Chem. Phys. Letters **53**, 177-181 (1978).
- [85] A. Hayd, E. G. Weidemann and G. Zundel: *Theory of IR Continua with Polarizable Hydrogen Bonds. I. Aqueous Solutions of Strong Acids*. In: J. Chem. Phys. **70**, 86-91 (1979).
- [86] H. Formanek, K. H. Schleifer, H. P. Seidel, R. Lindemann and G. Zundel: *Three-dimensional Structure of Peptidoglycan of Bacterial Cell Walls: Infrared Investigations*. In: FEBS Letters **70**, 150-154 (1976).
- [87] G. Zundel and A. Murr: *Influence of Transition Element Ions on the Hydrogen Bonds Formed by their First Hydration Shell*. In: „Metal-Ligand Interactions in Organic Chemistry and Biochemistry“, part 2, B. Pullman and N. Goldblum, Eds., Reidel Publ. Co., Dordrecht, Holland, 1977, pp. 264-271.
- [88] G. Zundel and A. Nagyrevi: *Polarizability, Proton Transfer and Symmetry of Energy Surfaces of Phenol-n-Propylamine Hydrogen Bonds. Infrared Investigations*. In: J. Phys. Chem. **82**, 685-689 (1978).

[89] R. Lindemann and G. Zundel: *Polarizability, Proton Transfer and Symmetry of Energy Surfaces of Carboxylic Acid-N Base Hydrogen Bonds*.
In: J. Chem. Soc. Faraday Trans. II **73**, 788-803 (1977).

[90] R. Lindemann and G. Zundel: *Proton Transfer in and Polarizability of Hydrogen Bonds in Proteins Coupled with Conformational Changes. I. Infrared Investigation of Polyglutamic Acid with Various N Bases*. In: Biopolymers **16**, 2407-2418 (1977).

[91] R. Lindemann and G. Zundel: *Proton Transfer in and Polarizability of Hydrogen Bonds in Proteins Coupled with Conformational Changes. II. IR Investigation of Polyhistidine with Various Carboxylic Acids*. In: Biopolymers **17**, 1285-1307 (1978).

[92] G. Zundel: *The Charge Relay System in Chymotrypsin - IR Studies of Models for the Hydrogen Bonds*. In: J. Mol. Struct. **45**, 55-73 (1978).

[93] G. Zundel: *Anwendung der Infrarotspektroskopie*. In: „Biophysik ein Lehrbuch“, W. Hoppe, W. Lohmann, H. Markl und H. Ziegler Eds., Springer 1977, pp. 103-108.

[94] G. Zundel: *Anwendung der ORD und CD Spektroskopie*.
In: „Biophysik ein Lehrbuch“, W. Hoppe, W. Lohmann, H. Markl und H. Ziegler Eds., Springer 1977, pp. 108-112.

[95] R. Lindemann, W. Kristof, B. Vogt and G. Zundel: *Proton Translocation via Easily Polarizable Hydrogen Bonds between Side Chains in Proteins*.
In: Hoppe-Seyler's Z. Physiol. Chem. **359**, 1114 (1978).

[96] M. Leuchs and G. Zundel: *Easily Polarizable Hydrogen Bonds in Aqueous Solutions of Acids. Nitric Acid*. In: J. Phys. Chem. **82**, 1632-1635 (1978).

[97] M. Leuchs and G. Zundel: *Easily Polarizable Hydrogen Bonds in Aqueous Solutions of Acids. Perchloric Acid and Trifluoromethane Sulphonic Acid*.
In: J. Chem. Soc. Faraday Trans. II **74**, 2256-2267 (1978).

[98] R. Janoschek, A. Hayd, E. G. Weidemann, M. Leuchs and G. Zundel: *Calculated and Observed Isotope Effects with Easily Polarizable Hydrogen and Deuterium Bonds*.
In: J. Chem. Soc. Faraday Trans. II **74**, 1238-1245 (1978).

[99] B. Brzezinski and G. Zundel: *Intramolecular Easily Polarizable Hydrogen Bonds with 1-Piperidine Carboxylic Acid N-Oxides*.
In: Z. Physik. Chem. (Frankfurt) **111**, 31-37 (1978).

- [100] M. Leuchs and G. Zundel: *Easily Polarizable Hydrogen Bonds and Solvate Structure in Aqueous Solutions of Acids with $pK_a < 1$* . In: *Canad. J. Chem.* **58**, 311-322 (1980).
- [101] B. Brzezinski and G. Zundel: *Intramolecular Easily Polarizable $N^+ H \cdots N$ Hydrogen Bonds with NN' -dipiperidylalkane Perchlorates*. In: *J. Chem. Soc. Faraday Trans. II* **75**, 661-666 (1979).
- [102] B. Brzezinski and G. Zundel: *An Intramolecular Charge Relay System via Easily Polarizable Hydrogen Bonds in N -(4-Methyl-2-Pyridyl) Amide of 6-Methyl Picolinic Acid N -Oxide*. In: *J. Phys. Chem.* **83**, 1787-1789 (1979).
- [103] G. Zundel and E. G. Weidemann: *Comment on the „Phonon Theory of IR Continua“*. In: *Chem. Phys.* **44**, 427-428 (1979).
- [104] G. Zundel: *The Nature of Hydrogen Bonds and Structure with Solvated Excess and Defect Protons in Liquids*. In: *Acta Universitatis Wratislaviensis 425, Dielektryczne i Optyczne Aspekty*. Vol. IV, **5**, Wrocław, pp. 5-18 (1978).
- [105] B. Brzezinski and G. Zundel: *Intramolecular Easily Polarizable Hydrogen Bonds in Diamides of Succinic and o -Phthalic Acid*. In: *Chem. Phys. Letters* **61**, 315-318 (1979).
- [106] M. Leuchs and G. Zundel: *Polarizable Acid-Acid and Acid-Water Hydrogen Bonds with H_3PO_2 , H_3PO_3 , H_3PO_4 and H_3AsO_4* . In: *Canad. J. Chem.* **57**, 487-493 (1979).
- [107] B. Brzezinski and G. Zundel: *A Non-Charged Intramolecular Easily Polarizable Hydrogen Bond in 2-(α Pyridyl N -Oxide) Ethane Sulfonic Acid*. In: *J. Mol. Struct.* **68**, 315-317 (1980).
- [108] B. Brzezinski and G. Zundel: *Influence of Screening of Intramolecular Easily Polarizable Hydrogen Bonds on Their Infrared Absorbance*. In: *J. Chem. Soc. Faraday Trans. II* **76**, 1061-1066 (1980).
- [109] N. K. Roberts and G. Zundel: *IR Studies of Long-Range Surface Effects - Excess Proton Mobility in Water in Quartz Pores*. In: *Nature* **278**, 726-728 (1979).
- [110] M. Leuchs and G. Zundel: *Polarizable Acid-Water Hydrogen Bonds with Aqueous Solutions of Carboxylic Acids*. In: *J. Chem. Soc. Faraday Trans. II* **76**, 14-25 (1980).
- [111] B. Brzezinski and G. Zundel: *Steric Conditions and Polarizability of Structurally Symmetrical Intramolecular Hydrogen Bonds in R -Di-(α -Pyridyl) Hydroperchlorates*. In: *Chem. Phys. Letters* **70**, 55-59 (1980).

[112] M. Leuchs and G. Zundel: *Formation of Acid-Water Hydrogen Bonds with Large Proton Polarizability and Molecular Processes with Dissociation of Acids in the pK_a Range 0 - 4*. In: *Canad. J. Chem.* **60**, 2118-2131 (1982).

[113] H. Pfeiffer, E. G. Weidemann and G. Zundel: *Interactions of Easily Polarizable Hydrogen Bonds. Theoretical Considerations. 1. Interactions of a Single Bond*. In: *J. Phys. Chem.* **83**, 2544-2551 (1979).

[114] B. Brzezinski and G. Zundel: *Proton Polarizability of Intramolecular Hydrogen Bonds with Molecules Non-Conjugated and Conjugated between Donor and Acceptor Groups*. In: *Chem. Phys. Letters* **75**, 500-504 (1980).

[115] B. Brzezinski and G. Zundel: *Influence of Stereochemistry, Screening and Deuteration with Long and Short Intramolecular Easily Polarizable Hydrogen Bonds on their IR Continua*. In: *Canad. J. Chem.* **59**, 786-794 (1981).

[116] B. Brzezinski and G. Zundel: *Intramolecular Easily Polarizable Charged and Non-Charged Hydrogen Bonds - IR Continua and Hydrogen Bond Length*. In: *J. Mol. Struct.* **72**, 9-15 (1981).

[117] B. Brzezinski and G. Zundel: *Intramolecular, Negatively Charged, Easily Polarizable Hydrogen Bonds in Monosalts of Diols*. In: *J. Chem. Soc. Faraday Trans. II* **77**, 1101-1105 (1981).

[118] W. Danninger and G. Zundel: *Intense Depolarized Rayleigh Scattering in Raman Spectra of Acids Caused by Large Proton Polarizabilities of Hydrogen Bonds*. In: *J. Chem. Phys.* **74**, 2769-2777 (1981).

[119] W. Danninger and G. Zundel: *Reorientational Motion and Orientational Correlation Functions in Weakly Associated Organic Liquids - Determined by Depolarized Rayleigh Scattering*. In: *Chem. Phys. Letters* **90**, 69-75 (1982).

[120] J. Fritsch and G. Zundel: *Influence of the Polarity of the Environment on Easily Polarizable $OH \cdots N \rightleftharpoons O^- \cdots H^+ N$ Hydrogen Bonds*. In: *J. Phys. Chem.* **85**, 556-561 (1981).

[121] J. Fritsch and G. Zundel: *Environmental Influences on the Formation and on the Proton Potentials of Easily Polarizable $N^+H \cdots N \rightleftharpoons N \cdots H^+ N$ Hydrogen Bonds*. In: *J. Chem. Soc. Faraday Trans. I* **77**, 2193-2202 (1981).

- [122] G. Zundel, U. Böhner, J. Fritsch, H. Merz and B. Vogt: *Infrared Spectroscopy in Food Technology*. In: „Food Analysis, Principles and Techniques“, D. W. Gruenwedel and J. R. Whitacker, Eds., Vol. II, Dekker, 1984, pp. 435-509.
- [123] W. Kristof and G. Zundel: *Structurally Symmetrical, Easily Polarizable Hydrogen Bonds between Side Chains in Proteins and Proton Conducting Mechanisms*. In: *Biopolymers* **19**, 1753-1769 (1980).
- [124] W. Kristof and G. Zundel: *Proton Transfer in and Polarizability of Hydrogen Bonds in Proteins, Tyrosine-Lysine and Glutamic Acid-Lysine Hydrogen Bonds - IR Investigations*. In: *Biophys. Struct. Mech.* **6**, 209-225 (1980).
- [125] J. Bandekar and G. Zundel: *High Sensitivity of Amide V Bands in Uracil and its Derivatives to the Strength of Hydrogen Bonding*. In: *Spectrochim. Acta* **38A**, 815-819 (1982).
- [126] G. Zundel: *Polare Wechselwirkungen, Hydratation, Protonenleitung und Konformation biologischer Systeme - Infrarot-Untersuchungen*. In: „Biophysik - ein Lehrbuch“, W. Hoppe, W. Lohmann, H. Markl und H. Ziegler, Eds., Springer Berlin, 1982, 253-265.
- [127] P. P. Rastogi, W. Kristof and G. Zundel: *Easily Polarizable N⁺H...N Hydrogen Bonds Between Histidine Side Chains and Proton Translocation in Proteins*. In: *Biochem. Biophys. Res. Comm.* **95**, No. 2, 902-908 (1980).
- [128] W. Kristof and G. Zundel: *Proton Transfer and Polarizability of Hydrogen Bonds Formed between Cysteine and Lysine Residues in Proteins*. In: *Biopolymers* **21**, 25-42 (1982).
- [129] P. P. Rastogi, W. Kristof and G. Zundel: *Easily Polarizable Proton Transfer Hydrogen Bonds between the Side Chains of Histidine and Carboxylic Groups of Glutamic and Aspartic Acid Residues in Proteins*. In: *Internat. J. Biol. Makromol.* **3**, 154-158 (1981).
- [130] P. P. Rastogi and G. Zundel: *Proton Translocation in Hydrogen Bonds with Large Proton Polarizability formed between a Schiff Base and Phenols*. In: *Biochem. Biophys. Res. Comm.* **99**, 804-812 (1981).
- [131] H. Merz and G. Zundel: *Proton Conduction in Bacteriorhodopsin via a Hydrogen-Bonded Chain with Large Proton Polarizability*. In: *Biochem. Biophys. Res. Comm.* **101**, 540-546 (1981).

[132] N. K. Roberts and G. Zundel: *Long-Range Structuring of Water by Quartz and Glass Surfaces as Indicated by the Infrared Continuum and Diffusion Coefficient of the Excess Proton*. In: J. Phys. Chem. **84**, 3655-3660 (1980).

[133] B. Brzezinski and G. Zundel: *An Intramolecular $SH \cdots N \rightleftharpoons S^- \cdots H^+ N$ Hydrogen Bond with Large Proton Polarizability*. In: J. Mol. Struct. **84**, 205-211 (1982).

[134] B. Brzezinski and G. Zundel: *Electronic Structure of Molecules and Infrared Continua Caused by Intramolecular Hydrogen Bonds with Great Proton Polarizability*. In: J. Phys. Chem. **86**, 5133-5135 (1982).

[135] B. Brzezinski and G. Zundel: *Screening of Intramolecular Hydrogen Bonds in Monosalts of Diols and IR Continuum*. In: Chem. Phys. Letters **87**, 400-402 (1982).

[136] B. Brzezinski and G. Zundel: *Influence of Solvents on Intramolecular Hydrogen Bonds with Large Proton Polarizability*. In: J. Magn. Resonance **48**, 361-366 (1982).

[137] G. Zundel and J. Fritsch: *Interactions and Structure of Ionic Solvates - Infrared Results*. In: „Chemical Physics of Solvation“, Vol. II, Ch. 2, R. R. Dogonadze, E. Kálmán, A. A. Kornyshev and J. Ulstrup, Eds., Elsevier, Amsterdam, 1986, pp. 21-96.

[138] G. Zundel and J. Fritsch: *Infrared Spectroscopic Results on Solvate Structures in Crystals*. In: „Chemical Physics of Solvation“, Vol. II, Ch. 3, R. R. Dogonadze, E. Kálmán, A. A. Kornyshev and J. Ulstrup, Eds., Elsevier, Amsterdam, 1986, pp. 97-117.

[139] P. P. Rastogi and G. Zundel: *Aspartic Acid-Aspartate and Glutamic Acid-Gluamate Hydrogen Bonds Having Great Proton Polarizability - IR Investigations*. In: Z. Naturforschg. **36c**, 961-963 (1981).

[140] H. Merz and G. Zundel: *Proton-Transfer Equilibria in Phenol-Carboxylate Hydrogen Bonds. Implications for the Mechanism of Light-Induced Proton Activation in Bacteriorhodopsin*. In: Chem. Phys. Letters **95**, 529-532 (1983).

[141] G. Zundel: *Hydrate Structures, Intermolecular Interactions and Proton Conducting Mechanism in Polyelectrolyte Membranes - Infrared Results*. In: J. Membrane Science **11**, 249-274 (1982).

[142] B. Brzezinski and G. Zundel: *Intramolecular Negatively Charged $SH \cdots S^- \rightleftharpoons ^-S \cdots HS$ Hydrogen Bonds with Large Proton Polarizability*. In: Chem. Phys. Letters **95**, 458-462 (1983).

[143] G. Zundel and J. Fritsch: *Environmental Interactions of Hydrogen Bonds Showing Large Proton Polarizability. Molecular Processes and Thermodynamics of the Acid Dissociation*. In: J. Phys. Chem. **88**, 6295-6302 (1984).

[144] B. Brzezinski and G. Zundel: *Influence of Substituents and Solvent on the Proton-Transfer Equilibria in an Intramolecular Hydrogen Bond with Large Proton Polarizability - IR and NMR Results*. In: J. Phys. Chem. **87**, 5461-5463 (1983).

[145] B. Brzezinski and G. Zundel: *Intramolecular $\text{NH}\cdots\text{N}^- \rightleftharpoons \text{N}^-\cdots\text{HN}$ Hydrogen Bonds with Large Proton Polarizability in Monosalts of Diamines*. In: J. Chem. Soc. Faraday Trans. II **79**, 1249-1257 (1983).

[146] J. Fritsch and G. Zundel: *FIR Hydrogen Bond Stretching Vibration as Function of Proton Transfer with Phenol-Pyridine Systems*. In: Spectroscopy Letters **17**, 41-46 (1984).

[147] M. Rospenk, J. Fritsch and G. Zundel: *Solvent Effect on the Proton-Transfer Equilibria and Thermodynamic Data of the Hydrogen Bond in a Mannich Base*. In: J. Phys. Chem. **88**, 321-323 (1984).

[148] J. Bandekar and G. Zundel: *The Role of C=O Transition Dipole-Dipole Coupling Interaction in Uracil*. In: Spectrochim. Acta **39A**, 337-341 (1983).

[149] J. Bandekar and G. Zundel: *Normal Coordinate Analysis Treatment on Uracil in Solid State*. In: Spectrochim. Acta **39A**, 343-355 (1983).

[150] G. Zundel and K. Leberle: *Proton Polarizability of Poly (L-tyrosine)-Hydrogen Phosphate - Hydrogen Bonds as a Function of Alkali Cations*. In: Biopolymers **23**, 695-705 (1984).

[151] G. Albrecht and G. Zundel: *Phenol-Amine Hydrogen Bonds with Large Proton Polarizabilities. Position of the $\text{OH}\cdots\text{N} \rightleftharpoons \text{O}^-\cdots\text{H}^+\text{N}$ Equilibrium as a Function of the Donor and Acceptor*. In: J. Chem. Soc. Faraday Trans. I **80**, 553-561 (1984).

[152] J. Fritsch, G. Zundel, A. Hayd and M. Maurer: *Proton Polarizability of Hydrogen-Bonded Chains - an ab initio SCF Calculation with a Model Related to the Conducting System in Bacteriorhodopsin*. In: Chem. Phys. Letters **107**, 65-69 (1984).

[153] G. Albrecht and G. Zundel: *Carboxylic Acid-N Base Hydrogen Bonds with Large Proton Polarizability in Acetonitrile as a Function of the Basicity of the Hydrogen Bond Acceptors*. In: Z. Naturforschg. **39a**, 986-992 (1984).

[154] G. Albrecht and G. Zundel: *Thiophenol-N Base Hydrogen Bonds. Proton Polarizability and Proton Transfer within these Bonds.*

In: Chem. Phys. Letters **105**, 598-603 (1984).

[155] G. Zundel: *Polar Interactions, Hydration, Proton Conduction and Conformation of Biological Systems - Infrared Results.*

In: „Biophysics“, W. Hoppe, W. Lohmann, H. Markl and H. Ziegler, Eds., Springer, Berlin, 1983, pp. 243-254.

[156] B. Brzezinski and G. Zundel: *Far IR continua caused by large polarizabilities of intramolecular $N^+Li \cdots N \rightleftharpoons N \cdots Li^+N$ bonds due to cation motion.*

In: J. Chem. Phys. **81**, 1600-1603 (1984).

[157] B. Brzezinski and G. Zundel: *Intramolecular Hydrogen Bonds with Large Proton Polarizability in Semisalts of Mono- and Di-N-Oxides of N,N'Tetraalkyl-o-Xylyldiamines.*

In: J. Mol. Struct. **118**, 311-318 (1984).

[158] U. Böhner and G. Zundel: *Proton Potentials and Proton Polarizability in Carboxylic Acid - Trimethylamine Oxide Hydrogen Bonds as a Function of the Donor and Acceptor Properties: IR Investigations.* In: J. Phys. Chem. **90**, 964-973 (1986).

[159] U. Böhner and G. Zundel: *Broad Single-minimum Proton Potential and Proton Polarizability of the Hydrogen Bonds in Trifluoroacetic Acid + Pyridine-N-Oxide Systems as a Function of Donor and Acceptor Properties and Environment - Infrared Studies.*

In: J. Chem. Soc. Faraday Trans. I **81**, 1425-1434 (1985).

[160] G. Zundel and H. Merz: *On the Role of Hydrogen Bonds and Hydrogen-Bonded Systems with Large Proton Polarizability for Mechanisms of Proton Activation and Conduction in Bacteriorhodopsin.*

In: „Proceedings of the 10th International Conference of Biological Membranes, Cranes, 1983“, J. J. M. Helmreich, Ed., A. R. Liss Inc., New York, 1984, pp. 153-163.

[161] J. Bandekar and G. Zundel: *Low Temperature Conformation of Mg^{2+} -Poly(U) in D_2O as Revealed by IR and Raman Spectroscopy and by Normal-Mode Analysis Treatment.* In: Biopolymers **23**, 2623-2638 (1984).

[162] H. Merz and G. Zundel: *Thermodynamics of Proton Transfer in Carboxylic Acid-Retinal Schiff Base Hydrogen Bonds with Large Proton Polarizability.*

In: Biochem. Biophys. Res. Comm. **138**, 819-825 (1986).

- [163] U. Böhner and G. Zundel: *Proton Potentials and Proton Polarizability of Hydrogen Bonds in Sulfonic Acid-Oxygen Base Systems as a Function of the ΔpK_a* . In: J. Phys. Chem. **89**, 1408-1413 (1985).
- [164] G. Zundel, H. Merz and U. Burget: *Proton Polarizability of Hydrogen Bonds and Proton Conduction and Activation in Biological Membranes*. In: „H⁺-ATPase (ATP Synthase): Structure, Function, Biogenesis“, S. Papa, K. Altendorf, L. Ernster and L. Packer, Eds., Adriatica Editrice, Bari, 1984, 285-294.
- [165] U. Burget and G. Zundel: *Proton Polarizability and Proton-Transfer in Histidine-Phosphate Hydrogen Bonds as a Function of Cations Present - IR Investigations*. In: Biopolymers **26**, 95-108 (1987).
- [166] U. Burget and G. Zundel: *Lysine-Phosphate Hydrogen Bonds and Hydrogen-Bonded Chains with Large Proton Polarizability in Polylysine-Phosphate Systems: IR Investigations*. In: J. Mol. Struct. **145**, 93-109 (1986).
- [167] G. Zundel: *Proton Polarizability of Hydrogen Bonds: Infrared Methods, Relevance to Electrochemical and Biological Systems*. In: „Biomembranes, Protons and Water: Structure and Translocation“ (a Volume of Methods in Enzymology), Vol. 127, part 0, L. Packer, Ed., Academic Press, New York, 1986, pp. 439-455.
- [168] U. Burget and G. Zundel: *Glutamic Acid-Hydrogen Phosphate Hydrogen Bonds - Proton Polarizability and Proton Transfer as a Function of the Cations Present: Infrared Investigations*. In: J. Chem. Soc. Faraday Trans. I **84**, 885-898 (1988).
- [169] U. Burget and G. Zundel: *Glutamic Acid-Dihydrogen Phosphate Hydrogen-Bonded Networks: Their Proton Polarizability as a Function of Cations Present - Infrared Investigations*. In: Biophys. J. **52**, 1065-1070 (1987).
- [170] R. Krämer and G. Zundel: *Thermodynamic Data of Proton Transfer Hydrogen Bonds as a Function of the Properties of the Hydrogen Bond Donors and the Polarity of the Environments*. In: Z. Physik. Chem. (Frankfurt) **144**, 265-277 (1985).
- [171] H. Merz, U. Tangermann and G. Zundel: *Thermodynamics of Proton Transfer in Phenol-Acetate Hydrogen Bonds with Large Proton Polarizability and the Conversion of Light Energy into Chemical Energy in Bacteriorhodopsin*. In: J. Phys. Chem. **90**, 6535-6541 (1986).

[172] B. Brzezinski and G. Zundel: *Influence of Conjugation of Donor and Acceptor on the Properties of Hydrogen Bonds of cis and trans Isomers.*
In: Chem. Phys. Letters **115**, 212-215 (1985).

[173] B. Brzezinski and G. Zundel: *Proton and Li^+ -Polarizability of Systems with Intramolecular Fluctuation of H^+ and $\text{Li}^{+\ast}$ between Four N or NO Acceptors - an Infrared Investigation of Hydrogen and Li^+ Bonds.* In: J. Chem. Soc. Faraday Trans. I **81**, 2375-2380 (1985).

[174] B. Brzezinski, G. Zundel and R. Krämer: *Proton Polarizability Caused by Collective Proton Motion in a System with two Intramolecular Hydrogen Bonds.*
In: Chem. Phys. Letters **124**, 395-400 (1986).

[175] H. Schmieder, O. Kasende, H. Merz, P. P. Rastogi and G. Zundel: *Influence of Phenol Acidity and Solvent Polarity with Phenol-Retinal Schiff Base Hydrogen Bonds - Thermodynamic Parameters of Bond Formation and Proton Transfer.*
In: J. Mol. Struct. **161**, 87-96 (1987).

[176] U. Burget and G. Zundel: *Tyrosine-Hydrogen Phosphate H-Bonds with Large Proton Polarizability as a Function of the P_i :Tyr Ratio and of the Cations Present - IR Investigations.* In: Biochem. (Life Science Advances) **7**, 35-43 (1988).

[177] M. Eckert and G. Zundel: *Proton Polarizability, Dipole Moment and Proton Transitions of an $\text{AH}\cdots\text{B}\rightleftharpoons\text{A}^-\cdots\text{H}^+\text{B}$ Proton Transfer Hydrogen Bond as a Function of an External Electrical Field: an ab initio SCF Treatment.*
In: J. Phys. Chem. **91**, 5170-5177 (1987).

[178] B. Brzezinski, G. Zundel and R. Krämer: *Proton Polarizability Caused by Collective Proton Motion in Intramolecular Chains Formed by Two and Three Hydrogen Bonds. Implications for the Charge Conduction in Bacteriorhodopsin.*
In: J. Phys. Chem. **91**, 3077-3080 (1987).

[179] B. Brzezinski, J. Olejnik and G. Zundel: *The Influence of Additional N-Atoms in Molecules on the Formation of the Intramolecular $\text{NH}^+\cdots\text{N}$ Bond.*
In: Chem. Phys. Letters **135**, 93-96 (1987).

[180] M. Eckert and G. Zundel: *Energy Surfaces and Proton Polarizability of Hydrogen-Bonded Chains: an ab Initio Treatment with Respect to the Charge Conduction in Biological Systems.* In: J. Phys. Chem. **92**, 7016-7023 (1988). See also **93**, 5324 (1989).

- [181] M. Eckert and G. Zundel: *Motion of one Excess Proton between Various Acceptors: Theoretical Treatment of the Proton Polarizability of Such Systems.*
In: J. Mol. Struct. (Theochem.) **181**, 141-148 (1988).
- [182] B. Brzezinski, G. Zundel and R. Krämer: *Intramolecular Li^+ and Bonds with Fluctuating Charge in Dicarboxylates and in a Dialcoholate: A Fourier Transform Infrared Spectroscopic Study.* In: J. Phys. Chem. **92**, 7012-7015 (1988).
- [183] B. Brzezinski, G. Zundel and R. Krämer: *Intermolecular Bonds between N-Oxides with Fluctuating Li^+ ions: an FT-IR Study.* In: Chem. Phys. Letters. **146**, 138-142 (1988).
- [184] B. Brzezinski, G. Zundel and R. Krämer: *Collective Proton Motion in a Hydrogen-Bonded System in Disubstituted Protonated Mannich Bases: an FT-IR Study.*
In: J. Mol. Struct. **189**, 243-247 (1988).
- [185] G. Zundel: *Proton Transfer in and Proton Polarizability of Hydrogen Bonds: IR and Theoretical Studies Regarding Mechanisms in Biological Systems.*
In: J. Mol. Struct. **177**, 43-68 (1988).
- [186] K. Leberle, I. Kempf and G. Zundel: *An Intramolecular Hydrogen Bond with Large Proton Polarizability within the Head Group of Phosphatidylserine - an IR Investigation.*
In: Biophys. J. **55**, 637-648 (1989).
- [187] K. Leberle and G. Zundel: *Hydrogen Bonds with Large Proton Polarizability in Films of $(\text{L-His})_n$ and $(\text{L-Lys})_n$ with a Model Molecule of the Head Group of Phosphatidylserine: Proton Conduction in Polar Surfaces of Biological Membranes.*
In: J. Mol. Struct. **201**, 175-188 (1990).
- [188] G. Zundel: *Proton Polarization of Hydrogen Bonds - Its Significance in Electrochemistry and Biology.* In: Acta Universitatis Wratislaviensis **843**, Dielektryczne i Optyczne Aspekty VIII, 73-112 (1987).
- [189] B. Brzezinski and G. Zundel: *Fluctuation of Be^{2+} between Four Acceptors and Be^{2+} Polarizability of Cation Bonds: a FT-IR Study.* In: J. Phys. Chem. **94**, 4772-4774 (1990).
- [190] B. Brzezinski, J. Olejnik, G. Zundel and R. Krämer: *Change of the Proton Potential from a Single to a Double Minimum in Intramolecular Hydrogen Bonds with Increasing pK_a of the Phenolic Group in 4-R-MANNICH Base N-Oxides.*
In: J. Mol. Struct. **212**, 247-253 (1989).

- [191] B. Brzezinski, J. Olejnik and G. Zundel: *Intramolecular Bonds with Double Minimum Potential Wells*. In: Chem. Phys. Letters **167**, 11-15 (1990).
- [192] R. Krämer and G. Zundel: *Influence of Specific Interaction Effects on the Proton Transfer Equilibrium in Intermolecular Hydrogen Bonds of Carboxylic Acids and Amines*. In: J. Chem. Soc. Faraday Trans. **86**, 301-305 (1990).
- [193] B. Brzezinski, J. Olejnik, G. Zundel and R. Krämer: *Intramolecular $O^- Li^+ \cdots ON \rightleftharpoons O^- \cdots Li^+ ON$ Bonds with Large Li^+ Polarizability. An FT-IR Study*. In: Chem. Phys. Letters **156**, 213-217 (1989).
- [194] B. Brzezinski, H. Maciejewska, G. Zundel and R. Krämer: *Collective Proton Motion and Proton Polarizability of Hydrogen-Bonded Systems in Disubstituted Protonated Mannich Bases*. In: J. Phys. Chem. **94**, 528-531 (1990).
- [195] B. Brzezinski, G. Zundel and R. Krämer: *An Intramolecular Chain of Four Hydrogen Bonds with Proton Polarizability due to Collective Proton Motion*. In: Chem. Phys. Letters **157**, 512-514 (1989).
- [196] B. Brzezinski, St. Paszyc and G. Zundel: *The Influence of Temperature on the Proton Polarizability of an Intramolecular Hydrogen-Bonded System within the Gossypol Molecule*. In: Chem. Phys. Letters **167**, 7-10 (1990).
- [197] G. Zundel: *Hydrogen-Bonded Systems as Proton Wires Formed by Side Chains of Proteins and by Side Chains and Phosphates*. In: „Transport through Membranes: Carriers, Channels and Pumps“, A. Pullman, J. Jortner and B. Pullman, Eds., Kluwer Acad. Publ., Dordrecht, 1988, pp. 409-420.
- [198] G. Zundel: *Molecular Processes with Dissociation and Solvate Structures of Acids*. In: „Ordering and Organization in Ionic Solutions“, N. Ise and I. Sogami, Eds., World Scientific Publ. Co. Pte. Ltd. Singapore, and Yamada Science Found., Osaka, 1988, pp. 53-63.
- [199] B. Brzezinski, H. Maciejewska and G. Zundel: *Proton Polarizability Due to Collective Proton Motion in Intramolecular Hydrogen-Bonded Systems in Monoperchlorates of 2,6-Bis((diethylamino)methyl)-4-R-phenol Di-N-oxides as a Function of the pK_a of the Phenolic Group*. In: J. Phys. Chem. **94**, 6983-6986 (1990).
- [200] G. Zundel and M. Eckert: *IR Continua of Hydrogen Bonds and Hydrogen-Bonded Systems, Calculated Proton Polarizabilities and Line Spectra*. In: J. Mol. Struct. (Theochem.) **200**, 73-92 (1989).

- [201] R. Krämer, R. Lang, B. Brzezinski and G. Zundel: *Proton Transfer in Intramolecular Hydrogen Bonds with Large Proton Polarizability in 1-Piperidine Carboxylic Acids - Temperature, Solvent and Concentration Dependence.*
In: J. Chem. Soc. Faraday Trans. **86**, 627-630 (1990).
- [202] G. Zundel and Th. Ruhland: *Proton Polarizability of $N^+H\cdots N \rightleftharpoons N\cdots H^+N$ Hydrogen Bonds and Far-infrared Continua with Nitrogen-base Systems - a FT-IR Study.*
In: J. Chem. Soc. Faraday Trans. **86**, 3557-3559 (1990).
- [203] B. Brzezinski, J. Olejnik and G. Zundel: *Phenol-Retinal Schiff Base Hydrogen Bonds - Influence of Steric Hindrance and Phenol Acidity on the Thermodynamic Data of Formation and Proton Transfer.* In: J. Mol. Struct. **238**, 89-99 (1990).
- [204a] B. Brzezinski, St. Paszyc and G. Zundel: *The Structure of Gossypol as a Function of the Presence of $HAuCl_4$ and of Be^{3+} Ions.* In: J. Mol. Struct. **246**, 45-51 (1991).
- [204b] B. Brzezinski, B. Marciniak, St. Paszyc and G. Zundel: *The Tautomerization of Gossypol as a Function of the Presence of Ni^{2+} , Cu^{2+} or Zn^{2+} Cations.*
In: J. Mol. Struct. **268**, 61-66 (1992).
- [205] B. Brycki, H. Maciejewska, B. Brzezinski and G. Zundel: *Preparation and NMR characterisation of hydrogen bonding in 2- and 2,6-bis-(N,N-Diethylaminomethyl)-4R-Phenols.* In: J. Mol. Struct. **246**, 61-71 (1991).
- [206] B. Brzezinski and G. Zundel: *Fluctuation of Be^{2+} between Four N-Oxide Acceptors and the Polarizability Caused by the Be^{2+} Motion.*
In: Chem. Phys. Letters **178**, 135-137 (1991).
- [207] B. Brzezinski, J. Olejnik and G. Zundel: *Retinal Schiff bases with aromatic and aliphatic amino-acids - the extremely different nature of the intramolecular hydrogen bond between the two types of compounds.* In: J. Mol. Struct. **270**, 11-18 (1992).
- [208] R. Krämer and G. Zundel: *Temperature Dependence of the Proton Transfer Equilibria With Phenol + Amine Systems as a Function of the Properties of the Solvent - Thermodynamic Data Determined from Van't Hoff Plots.*
In: Vestn. Slov. Kem. Drus. **39**, 169-177 (1992).
- [209] R. Krämer, G. Zundel, B. Brzezinski and J. Olejnik: *Discussion of the Proton Potential with Proton Transfer Equilibria: Thermodynamic Data and Infrared Continua as a Function of Temperature.* In: J. Chem. Soc. Faraday Trans. **88**, 1659-1664 (1992).

[210] B. Brzezinski, J. Olejnik and G. Zundel: *Interaction of Protonated Retinal Schiff Base with N-Methylacetamide: an FT-IR Investigation.*

In: J. Mol. Struct. **246**, 53-60 (1991).

[211] I. Kempf and G. Zundel: *The Allosteric Effector Molecule 2,3-Bisphosphoglycerate as a Function of Protonation in Aqueous Solutions - an FT-IR Study.*

In: J. Mol. Struct. **269**, 65-74 (1992).

[212] B. Brzezinski and G. Zundel: *Fourier-Transform Infrared Study of Intramolecular $O^-Li^+\cdots ON \rightleftharpoons O^- \cdots Li^+ ON$ Bonds with Large Li^+ Polarizability in 4-Substituted 2-Diethylaminomethylphenolate N-Oxides.* In: J. Chem. Soc. Faraday Trans. **87**, 1545-1548 (1991).

[213] B. Brzezinski and G. Zundel: *An Intramolecular Chain of Four Hydrogen Bonds in 1, 11, 12, 13, 14-Penta-hydroxymethylpentacene Tetrabutylammonium Salt.*

In: Chem. Phys. Letters **178**, 138-140 (1991).

[214] B. Brzezinski, B. Brycki, G. Zundel and Th. Keil: *Proton Potential as a Function of the pK_a of the Phenol in Intermolecular Phenol - Trimethylamine N-Oxide Hydrogen Bonds.*

In: J. Phys. Chem. **95**, 8598-8600 (1991).

[215] Th. Keil, B. Brzezinski and G. Zundel: *Far-Infrared Investigation of the Proton Transfer with Substituted Phenol + N-Mono- and N-N'-Dioxides as a Function of the pK_a of the Phenols.* In: J. Phys. Chem. **96**, 4421-4426 (1992).

[216] B. Brycki, B. Brzezinski, G. Zundel and Th. Keil: *1H and ^{13}C NMR Studies of the Proton Transfer in Complexes of Substituted Phenols with Trimethylamine N-Oxide.*

In: Mag. Res. Chem. **30**, 507-510 (1992).

[217] B. Brzezinski, G. Schroeder, G. Zundel and Th. Keil: *Complex Formation and Proton Transfer in the Polarizable Hydrogen Bonds of Two N,N'-Dioxides + Substituted Phenol Systems as a Function of the pK_a of the Phenols. An FT-IR Study.*

In: J. Chem. Soc. Perkin Trans. **2**, 819-823 (1992).

[218] E. Kryachko, M. Eckert and G. Zundel: *Study of Tunnelling in Symmetrical Double-Morse Hydrogen Bonds via the Instanton-Soliton Approach: Large Polarizability and Isotopic Effect.* In: J. Mol. Struct. (Theochem.) **235**, 157-183 (1991).

[219] E. Kryachko, M. Eckert and G. Zundel: *An Approach, Still Analytical, to the Study of Proton Tunneling in Symmetrical Hydrogen Bonds.* In: J. Mol. Struct. **270**, 33-65 (1992).

[220] G. Zundel: *Proton Transfer and Proton Polarizability of Hydrogen Bonds and Hydrogen-Bonded Systems in Electrochemistry, Biology and Surface Chemistry*. In: „Physics of Many Particle Systems”, Vol. **19**, A.S. Davydov, Ed., Naukovce Dumika, Kiev, 1991, pp. 77-97.

[221] G. Zundel and B. Brzezinski: *Proton Polarizability of Hydrogen-Bonded Systems due to Collective Proton Motion - with a Remark to the Proton Pathways in Bacteriorhodopsin*. In: „Proton Transfer in Hydrogen-Bonded Systems”, T. Bountis, Ed., Plenum Press, New York, 1992, pp. 153-166.

[222] J. Olejnik, B. Brzezinski and G. Zundel: *A Proton Pathway with Large Proton Polarizability and the Proton Pumping Mechanism in Bacteriorhodopsin – Fourier Transform Infrared Difference Spectra of Photoproducts of Bacteriorhodopsin and of its Pentademethyl Analogue*. In: *J. Mol. Struct.* **271**, 157-173 (1992).

[223] G. Zundel: *Hydrogen-Bonded Systems with Large Proton Polarizability due to Collective Proton Motion as Pathways of Protons in Biological Systems*. In: „Electron and Proton Transfer in Chemistry and Biology”, A. Müller, H. Ratajczak, W. Junge and E. Diemann, Eds., Elsevier, Amsterdam, 1992, pp. 313-327.

[224] B. Brzezinski, J. Sychala, K. Golankiewicz and G. Zundel: *Intermolecular Li^+ and Na^+ Bonds in *N*-(1,6-Dihydro-6-oxopyrimidin-2-yl) Amino Acids: Cation Polarizabilities Studied by Fourier-Transform Infrared Spectroscopy*. In: *J. Chem. Soc. Faraday Trans.* **88**, 1391-1393 (1992).

[225] B. Brzezinski, H. Maciejewska and G. Zundel: *Li^+ Polarizability due to Collective Motion of Li^+ Ions in Dilithium Salts of 2,6-Bis((diethylamino)methyl)-phenolate Di-*N*-Oxides as a Function of the Electron Density at the *O*-Atom of the Phenolate Group*. In: *J. Phys. Chem.* **96**, 9111-9113 (1992).

[226] B. Brzezinski, H. Maciejewska and G. Zundel: *^1H NMR Investigation of the Collective Proton Motion in the Hydrogen-Bonded Systems of Monoaurates of 2,6-Bis((diethylamino)methyl)-4-*R*-phenols*. In: *J. Phys. Chem.* **96**, 6564-6565 (1992).

[227] N. Wellner and G. Zundel: *Proton Transfer Processes in the Hydrogen-Bonded Structure of the Active Centre of Serine Proteases - an FT-IR Study*. In: *J. Mol. Struct.* **317**, 249-259 (1994).

[228] C. Nadolny, I. Kempf and G. Zundel: *Specific Interactions of the Allosteric Effector 2,3-Bisphosphoglycerate with Human Hemoglobin - A Difference FTIR Study*. In: *Biological Chemistry Hoppe-Seyler* **374**, 403-407 (1993).

[229] B. Brzezinski, P. Radziejewski, J. Olejnik and G. Zundel: *An Intramolecular Hydrogen-Bonded System with Large Proton Polarizability - A Model with Regard to the Proton Pathway in Bacteriorhodopsin and other Systems with Collective Proton Motion*. In: *J. Mol. Struct.* **323**, 71-78 (1994).

[230] G. Zundel: *Proton Polarizability and Proton Transfer Processes in Hydrogen Bonds and Cation Polarizabilities of Other Cation Bonds - Their Importance to Understand Molecular Processes in Electrochemistry and Biology*. In: „Trends in Physical Chemistry“, J. Menon, Ed., Publ. Research Trends, Trivandrum, India, Vol. **3**, 1992, pp. 129-156.

[231] G. Zundel, B. Brzezinski and J. Olejnik: *On Hydrogen and Deuterium Bonds as well as on Li^+ , Na^+ and Be^{2+} Bonds: IR Continua and Cation Polarizabilities*. In: *J. Mol. Struct.* **300**, 573-592 (1993).

[232] S. Oh, A. Rabold and G. Zundel: *Far-infrared Study of Heteroconjugated and Homoconjugated Hydrogen Bonds between Trimethylamine N-Oxide and Various Carboxylic Acids as a Function of the pK_a of the Acid*. In: *J. Chem. Soc. Faraday Trans.* **89**, 1733-1736 (1993).

[233] B. Brzezinski and G. Zundel: *Possible Regulatory Role in Biology of Trimethylamine N-oxide and Aromatic N-oxides: Formation of Disulphide Bonds*. In: *J. Mol. Struct.* **303**, 141-147 (1994).

[234] B. Brzezinski, A. Jarczewski, M. Stanczyk and G. Zundel: *Hydrogen and Li^+ Bonds with Guanidine Substituted Azo-Compounds - a FT-IR Study*. In: *J. Mol. Struct.* **297**, 81-86 (1993).

[235] B. Brzezinski, H. Maciejewska-Urjasz, J. Olejnik and G. Zundel: *Na^+ Polarizability due to Collective Ion Motion in Disodium Salts of 2,6-Bis(diethylaminomethyl)phenolate Di-N-oxides as a Function of the Electron Density at the O Atom of the Phenolate Group*. In: *J. Chem. Soc. Faraday Trans.* **89**, 1211-1213 (1993).

[236] B. Brzezinski, B. Brycki, H. Maciejewska-Urjasz and G. Zundel: *1H and ^{13}C NMR Studies of the Proton Transfer in Intramolecular Hydrogen Bonds in Substituted 2-Diethylaminomethylphenol N-Oxides*. In: *Magn. Reson. Chem.* **31**, 642-644 (1993).

[237] B. Brzezinski, P. Radziejewski, J. Olejnik and G. Zundel: *A Cyclic Hydrogen-Bonded System with Collective Proton Motion in Bis[3,3'-(2,2'-dihydroxybiphenyl)] methane*. In: *J. Phys. Chem.* **97**, 6590-6591 (1993).

- [238] B. Brzezinski and G. Zundel: *Formation of Disulphide Bonds in the Reaction of SH Group-containing Amino Acids with Trimethylamine N-Oxide – A Regulatory Mechanism in Proteins*. In: FEBS Letters **333**, 331-333 (1993).
- [239] G. Zundel: *Hydrogen-Bonded Chains with Large Proton Polarizability as Charge Conductors in Proteins - Bacteriorhodopsin and the F_0 Subunit of the E. Coli*. In: J. Mol. Struct. **322**, 33-42 (1994).
- [240] B. Brzezinski, H. Maciejewska-Urjasz and G. Zundel: *^1H and ^{13}C NMR Studies of Intramolecular Hydrogen Bonds in Substituted 2,6-Bis((diethylamino)methyl)phenol Di-N-oxides and their Monotetrachloroaurates*. In: J. Mol. Struct. **319**, 177-182 (1994).
- [241] B. Brzezinski, A. Jarczewski and G. Zundel: *K^+ -Bonds and their Cation Polarizabilities - a FT-IR Study*. In: J. Mol. Liquids **67**, 15-21 (1995).
- [242] B. Brzezinski, A. Rabold and G. Zundel: *Far Infrared Study of the Hydrogen Bond Vibration of Intramolecular Bonds in Substituted 2-Diethylaminomethylphenol N-Oxides - as a Function of the pK_a of the Phenolic Group*. In: J. Chem. Soc. Faraday Trans. **90**, 843-844 (1994).
- [243] B. Brzezinski, J. Olejnik and G. Zundel: *Active Site of Bacteriorhodopsin - FT-IR and ^1H NMR Studies using a Model Molecule*. In: J. Chem. Soc. Faraday Trans. **90**, 1095-1098 (1994).
- [244] B. Brzezinski and G. Zundel: *Collective H^+ , Li^+ and Na^+ Motions and Cation Polarizabilities of the Cation-Bonded Systems within 1,11,12,13,14-Pentahydroxypentacene Salts: a FT-IR Study*. In: J. Phys. Chem. **98**, 2271-2274 (1994).
- [245] B. Brzezinski, A. Jarczewski, M. Stanczyk and G. Zundel: *Hydrogen and Li^+ Bonds with Guanidine Substituted Azo-Compounds - an FT-IR Study*. In: J. Mol. Struct. **297**, 81-86 (1993).
- [246] F. Bartl, G. Deckers-Hebestreit, K. Altendorf and G. Zundel: *The F_0 Complex of the ATP Synthase of Escherichia coli Contains a Proton Pathway with Large Proton Polarizability Caused by Collective Proton Fluctuation*. In: Biophys. J. **68**, 104-110 (1995).
- [247] J. Olejnik, B. Brzezinski and G. Zundel: *A Proton Pathway with Large Proton Polarizability in Bacteriorhodopsin*. In: „Future Direction of Nonlinear Dynamics in Physical and Biological Systems“, P. L. Christiansen et al., Eds., Plenum Press, New York, 1993, pp. 473-476.

[248] A. Rabold, R. Bauer and G. Zundel: *Structurally Symmetrical $N^+H\cdots N \rightleftharpoons N\cdots H^+N$ Bonds. The Proton Potential as a Function of the pK_a of the N-Base. FT-IR Results and Quantum Chemical Calculations.* In: J. Phys. Chem. **99**, 1889-1895 (1995).

[249] G. Iliadis, G. Zundel and B. Brzezinski: *Aspartic Proteinases - Fourier Transform IR Studies of the Aspartic Carboxylic Groups in the Active Site of Pepsin.*
In: FEBS Letters **352**, 315-317 (1994).

[250] B. Brzezinski, G. Schröder, A. Rabold and G. Zundel: *H^+ , Li^+ and Na^+ Polarizabilities in 1:1 Crown Ether Cation Complexes. A FT-IR Study.*
In: J. Phys. Chem. **99**, 8519-8523 (1995).

[251] B. Brzezinski, P. Radziejewski, A. Rabold and G. Zundel: *Hydrogen Bonds and Hydrogen-Bonded Systems in Mannich Bases of 2,2'-Biphenol: an FT-IR Study of the Proton Polarizability and Fermi Resonance Effects as a Function of Temperature.*
In: J. Mol. Struct. **355**, 185-191 (1995).

[252] A. Rabold and G. Zundel: *Hydrogen Bond Vibrations of Substituted Phenols with Trimethylamine N-Oxide. Comparison of Quantum Chemical Calculations with Experimental Results.* In: J. Phys. Chem. **99**, 12158-12163 (1995).

[253] A. Rabold, B. Brzezinski and G. Zundel: *Investigation of Substituted Phenol-Quinuclidine Hydrogen Bonded Complexes with IR Spectroscopy in the MIR and FIR as well as 1H NMR Measurements and Quantum Chemical Simulation.*
In: Acta Chim. Slov. **44**, 237-252 (1997).

[254] B. Brzezinski, M. Labowski and G. Zundel: *Disulphide Bond Formation by Glutathione via the Glutathione-trimethylamine-N-oxide complex.*
In: J. Mol. Struct. **354**, 127-130 (1995).

[255] B. Brzezinski, P. Radziejewski and G. Zundel: *A Model System for the Hydrogen-Bonded Chain with Large Proton Polarizability Present in the L_{550} Intermediate of Bacteriorhodopsin - an FT-IR Study.*
In: J. Chem. Soc. Faraday Trans. **91**, 3141-3146 (1995).

[256] F. Bartl, G. Zundel and B. Brzezinski: *A Model System for the Hydrogen-Bonded Chain in the Active Centre of the Maltodextrinphosphorylase - an FT-IR Study.*
In: J. Mol. Struct. **377**, 193-200 (1996).

- [257] F. Bartl, D. Palm, R. Schinzel and G. Zundel: *Proton Relay System in the Active Site of Maltodextrinphosphorylase via Hydrogen Bonds with Large Proton Polarizability - an FT-IR Difference Spectroscopy Study*. In: Eur. J. Biophys. **28**, 200-207 (1999).
- [258] R. Langner and G. Zundel: *FT-IR Investigation of Polarizable Hydrogen Bonds in Carboxylic Acid-Pyridine Complexes in the Mid- and Far-IR Region*. In: J. Chem. Soc. Faraday Trans. **91**, 3831-3838 (1995).
- [259] G. Zundel: *Hydrogen Bonds with Large Proton Polarizability in Proteins - Studies with Model Systems. Transworld Research Network (Ed.), Trivandrum, India*. In: Recent Res. Devel., Physical Chem. **2**, 501-532 (1998).
- [260] R. Langner and G. Zundel: *FT-IR Investigation of Polarizable, Strong Hydrogen Bonds in Sulfonic Acid-Sulfoxide, Phosphine Oxide, and Arsine Oxide Complexes in the Middle- and Far-Infrared Region*. In: J. Phys. Chem. **99**, 12214-12219 (1995).
- [261] S. Geppert, A. Rabold, G. Zundel and M. Eckert: *Theoretical Treatment of the Spectroscopical Data of a Strong Hydrogen Bond with a Broad Single-Minimum Potential*. In: J. Phys. Chem. **99**, 12220-12224 (1995).
- [262] G. Zundel: *The Far Infrared Vibration of Hydrogen Bonds with Large Proton Polarizability*. In: J. Mol. Struct. **381**, 23-37 (1996).
- [263] B. Brzezinski, H. Urjasz and G. Zundel: *A Cyclic Hydrogen-Bonded System with Large Proton Polarizability in Calixarenes - an FT-IR Study*. In: J. Phys. Chem. **100**, 9021-9023 (1996).
- [264] V. Schreiber, A. Kulbida, M. Rospenk, L. Sobczyk, A. Rabold and G. Zundel: *The Temperature Effect on the Proton Transfer Equilibrium and IR Spectra of Chlorophenol-Tributylamine Systems*. In: J. Chem. Soc. Faraday Trans. **92**, 2555-2561 (1996).
- [265] G. Iliadis, G. Zundel and B. Brzezinski: *Catalytic Mechanism of the Aspartate Proteinase Pepsin A - an FT-IR Study*. In: Biospectroscopy **3**, 291-297 (1997).
- [266] G. Iliadis, B. Brzezinski and G. Zundel: *Aspartic Proteinases - Fourier Transform Infrared Spectroscopic Studies of a Model of the Active Site*. In: Biophys. J. **71**, 2840-2847 (1996).
- [267] B. Brzezinski and G. Zundel: *Formation of Hydrogen-Bonded Chains between a Strong Base with Guanidine-like Character and Phenols with Various pK_a Values - an FT-IR Study*. In: J. Mol. Struct. **380**, 195-204 (1996).

[268] C. Nadolny and G. Zundel: *Protonation, Conformation and Hydrogen Bonding of Nicotinamide Adenine Dinucleotide*. In: J. Mol. Struct. **385**, 81-87 (1996).

[269] C. Nadolny and G. Zundel: *Fourier Transform Infrared Spectroscopic Studies of Proton Transfer Processes and the Dissociation of Zn²⁺ Bound Water in Alcohol Dehydrogenases*. In: Eur. J. Biochem. **247**, 914-919 (1997).

[270] B. Brzezinski and G. Zundel: *The Role of Water and Proton Transfer Processes in Hydrogen-Bonded Chains with Large Proton Polarizability*. In: Faraday Discussion **103**, 363-370 (1996).

[271] F. Bartl and G. Zundel: *Molecular Recognition and Proton Transfer Processes in Maltodextrinphosphorylase - an FT-IR Study*. In: J. Mol. Struct. **404**, 1-12 (1997).

[272] B. Brzezinski, H. Uriasz and G. Zundel: *A Model Molecule of the Hydrogen-Bonded Chain in the Active Site of Bacteriorhodopsin*. In: Biochim. Biophys. Res. Comm. **219**, 273-276 (1996).

[273] W. Galezowski, A. Jarczewski, M. Stanczyk, B. Brzezinski, F. Bartl and G. Zundel: *Homoconjugated Hydrogen Bonds with Amidine and Guanidine Bases - Osmometric, Potentiometric and FT-IR Studies*. In: J. Chem. Soc. Faraday Trans. **93**, 2515-2518 (1997).

[274] B. Brzezinski, F. Bartl and G. Zundel: *Excess Proton Hydrate Structures with Large Proton Polarizability, Screened by Tris-(2-Ethylhexyl) Phosphate*. In: J. Phys. Chem. **101**, 5607-5610 (1997).

[275] B. Brzezinski, R. Bauer and G. Zundel: *Homoconjugated NH...N⁻ ⇌ ⁻N...HN Hydrogen Bonds - IR Continuum and Proton Polarizability as a Function of the pK_a of the NH acids*. In: J. Mol. Struct. **436-437**, 103-106 (1997).

[276] B. Brzezinski, F. Bartl and G. Zundel: *Cyclic Li⁺ Bonded System with Large Li⁺ Polarizability due to Collective Li⁺ Motion in Calixarenes - an FT-IR Study*. In: J. Phys. Chem. B **101**, 5611-5613 (1997).

[277] B. Brzezinski, H. Urjasz, G. Zundel and F. Bartl: *Model Molecules for the Active Centre of Alcoholdehydrogenases - an FT-IR Study*. In: Biochem. Biophys. Res. Comm. **231**, 473-476 (1997).

[278] B. Brzezinski, H. Urjasz, F. Bartl and G. Zundel: *Hydrogen Bonds and a Hydrogen-Bonded Chain in Mannich Bases of 5,5'-Dinitro-2,2'-Biphenol - FT-IR and ¹H NMR Studies*. In: J. Mol. Struct. **435**, 59-64 (1997).

- [279] B. Brzezinski, Z. Rozwadowski, T. Dziembowska and G. Zundel: *Intramolecular Hydrogen Bonds and Hydrogen-Bonded Systems in di-Schiff Bases of 4-Methyl-Isophthalaldehyde with 4-Substituted Anilines*. In: J. Mol. Struct. **440**, 73-79 (1998).
- [280] G. Zundel and B. Brzezinski: *Hydrogen-Bonded Chains with Large Proton Polarizability due to Collective Proton Motion - Pathways for Protons in Biological Membranes*. In: Polish J. Chem. **72**, 172-192 (1998).
- [281] G. Zundel: *Li⁺, Na⁺, K⁺ and Be²⁺ bonds - IR continua and cation polarizabilities of these bonds*. In: J. Mol. Struct. **511-512**, 19-33 (1999).
- [282] F. Bartl, B. Brzezinski, B. Róžalski and G. Zundel: *FT-IR Study of the Nature of the Proton and Li⁺ Motions in Gramicidin A and C*. In: J. Phys. Chem. **B 102**, 5234-5238 (1998).
- [283] B. Brzezinski, B. Swoboda and G. Zundel: *A Cyclic Cation-Bonded System with Large Cation Polarizability due to Collective Cation Motion in Salts of Bis[3,3'-(2,2'-dihydroxybiphenyl)] methane*. In: J. Mol. Struct. **476**, 69-72 (1999).
- [284] B. Brzezinski and G. Zundel: *Formation of Hydrogen-Bonded Chains between N-Base and N-H Acids - a FT-IR Study*. In: J. Mol. Struct. **446**, 199-207 (1998).
- [285] B. Brzezinski, B. Róžalski, G. Schroeder, F. Bartl and G. Zundel: *Excess Proton Hydrate Structure with Large Proton Polarizability in the Channel of Trioxalkyl Phosphate*. In: J. Chem. Soc. Faraday Trans. **94**, 2093-2096 (1998).
- [286] E. Kryachko and G. Zundel: *Quantum Chemical Study of 1-Methyladenine and its Spectra in Gas Phase and in Solvent*. In: J. Mol. Struct. **446**, 41-54 (1998).
- [287] B. Brzezinski, G. Wojciechowski, H. Urjasz and G. Zundel: *FT-IR study of the proton polarizability of hydrogen bonds and of the hydrogen-bonded systems in a di-Mannich base of 5,5'-dimethoxy-2,2'-biphenol*. In: J. Mol. Struct. **470**, 335-339 (1998).
- [288] R. Langner and G. Zundel: *FT-IR Investigation of O...H...O Bonds with Large Proton Polarizability in Sulfonic Acid-N-Oxide Systems in the Middle and Far Infrared Region*. In: J. Chem. Soc. Faraday Trans. **94**, 1805-1811 (1998).
- [289] R. Langner, G. Zundel and B. Brzezinski: *FT-IR Investigation of CH...O and CH...N Hydrogen Bonds in CHCl₃ + Base Systems in the Middle Infrared Region*. In: Spectrochim. Acta, Part **A 55**, 35-41 (1999).

- [290] R. Langner and G. Zundel: *FT-IR Investigation of $\text{OH}\cdots\text{N}\rightleftharpoons\text{O}^-\cdots\text{H}^+\text{N}$ Hydrogen Bonds with Large Proton Polarizability in Phosphinic Acid + N-Base Systems in the Middle and Far Infrared Region*. In: *J. Phys. Chem.* **A 102**, 6635-6642 (1998).
- [291] G. Zundel: *IR and FT-IR Studies of Proton Polarizability and Proton Transfer with Hydrogen Bonds and Hydrogen-Bonded Systems - Importance of these Effects for Mechanisms in Biology*. In: *Ferroelectrics* **220**, 221-242 (1999).
- [292] A. Hayd and G. Zundel: *The Interaction of the Easily Polarizable Hydrogen Bonds with Phonons and Polaritons of the Thermal Bath - Far Infrared Continua*. In: *J. Mol. Struct.* **500**, 421-427 (2000).
- [293] F. Bartl, B. Różalski, G. Schroeder, B. Brzezinski, and G. Zundel: *FTIR Study of the Nature of the Na^+ Cation Motion in Gramicidin A*. In: *Biospectroscopy* **5**, 284-288 (1999).
- [294] G. Schroeder, B. Gierczyk, B. Brzezinski, B. Różalski, F. Bartl, G. Zundel, J. Sośnicki and E. Grech: *^{23}Na NMR and FT-IR Studies of Sodium Complexes with the Ionophore Lasalocid in Solution*. In: *J. Mol. Struct.* **516**, 91-98 (2000).
- [295] R. Langner and G. Zundel: *^1H NMR studies of proton transfer equilibria in hydrogen bonds – the role of entropy*. In: *Canad. J. Chem.* **79**, 1376-1380 (2001).
- [296] G. Wojciechowski, G. Schroeder, G. Zundel and B. Brzezinski: *Hydrogen Bonds and Hydrogen-Bonded Chains in Complexes of 3-hydroxymethyl-2,2'-biphenol with N-Bases – FTIR and ^1H NMR Studies*. In: *J. Phys. Chem. A* **104**, 7469-7472 (2000).
- [297] B. Brzezinski, G. Wojciechowski, G. Zundel, L. Sobczyk and E. Grech: *Negatively charged hydrogen-bonded chains formed by tetrazole*. In: *J. Mol. Struct.* **508**, 175-180 (1999).
- [298] M. Rospenk, L. Sobczyk, A. Rabold and G. Zundel: *Low temperature studies on ultraviolet and infrared spectra of ortho Mannich bases*. In: *Spectrochimica Acta, Part A* **55**, 855-860 (1999).
- [299] B. Gierczyk, G. Schroeder, G. Wojciechowski, B. Różalski, B. Brzezinski and G. Zundel: *FTIR and Multinuclear Magnetic Resonance Studies of Tris(oxaalkyl) Borates and Their Complexes with Li^+ and Na^+ Cations*. In: *Phys. Chem. Chem. Phys.* **1**, 4897-4901 (1999).

[300] G. Zundel: *Hydrogen Bonds with Large Proton Polarizability and Proton Transfer Processes in Electrochemistry and Biology*. In: *Advances in Chemical Physics*, Chicago, **111**, 1-217 (2000).

[301] G. Zundel: *Hydrogen Bonds and Hydrogen-Bonded Systems with Large Proton Polarizability - Their Importance in Electrochemistry and Biology*. In: Internet: http://nte-serveur.univ-lyon1.fr/nte/spectroscopie/zundel/internet_Zundel.htm (1999).

[302] G. Zundel: *Hydrogen Bonds with Large Proton Polarizability and the Molecular Understanding of Processes in Acid and Base Solutions*. In: *Research Trends Chem. Phys.* **7**, 143-156 (1999).

[303] B. Brzezinski, G. Wojciechowski, F. Bartl and G. Zundel: *Formation of hydrogen-bonded chains with inter- and intra-molecular hydrogen bonds by a strong base with guanidine-like character and 2,2'-biphenols*. In: *J. Mol. Struct.* **554**, 245-250 (2000).

[304] G. Zundel: *Hydrogen Bonds with Large Proton Polarizability in Crystals*. In: *J. Mol. Struct.* **552**, 81-86 (2000).

[305] R. Bauer and G. Zundel: *Homoconjugated (NH...N)⁻-Hydrogen Bonds with Great Proton Polarizability – FTIR and NMR studies*. In: *J. Phys. Chem.* **106**, 5828-5831 (2002).

[306] P. Pankiewicz, G. Wojciechowski, G. Schroeder, B. Brzezinski, F. Bartl and G. Zundel: *FT-IR Study of the Nature of the K⁺, Rb⁺ and Cs⁺ Cation Motions in Gramicidin A*. In: *J. Mol. Struct.* **565-566**, 213-217 (2001).

[307] G. Wojciechowski, G. Schroeder, B. Brzezinski and G. Zundel: *Hydrogen Bonds and Hydrogen-Bonded Chains in Complexes of 3-hydroxy-methyl-2,2'-biphenol with N-bases - FTIR and ¹H NMR Studies*. In: *J. Phys. Chem. A* **104**, 7469-7472 (2000).

[308] B. Swoboda, M. Betowska-Brzezinska, G. Schroeder, B. Brzezinski and G. Zundel: *Kinetic Studies of a Pepsin Active Site Model Compound and Porcine Pepsin*. In: *J. Phys. Org. Chem.* **14**, 103-108 (2001).

[309] B. Brzezinski, B. Gierczyk, B. Różalski, G. Wojciechowski, G. Schroeder and G. Zundel: *FTIR and NMR Study of Tris(okaalkyl) Borates and Their Complexes with H₂AuCl₄*. In: *J. Mol. Struct.* **519**, 119-123 (2000).

[310] G. Zundel: *Proton Polarizability of Hydrogen Bonds and Hydrogen Bonded Systems*. In: *Kharkov University Bulletin, Chemical Series* **7** (30), 1-21 (2001).

[311] P. Pankiewicz, G. Schroeder, B. Gierczyk, G. Wojciechowski, B. Brzezinski, F. Bartl and G. Zundel: *⁷Li NMR and FT-IR Studies of Lithium, Potassium, Rubidium and Cesium Complexes with Ionophore Lasalocid in Solution.*

In: *Biopolymers: Biospectroscopy* **62**, 173-182 (2001).

[312] P. Przybylski, G. Wojciechowski, B. Brzezinski, G. Zundel and F. Bartl: *FT-IR studies of the interactions of 1,3,5-triazabicyclo[4.4.0]dec-5-ene with 4-tert-butylphenol and 4-cyanophenol.* In: *J. Mol. Struct.* **661-662**, 171-182 (2003).

[313] R. Pankiewicz, A. Gurzkowska, B. Brzezinski, F. Bartl and G. Zundel: *FT-IR Study of the Nature of Proton and Cation Motions in Gramicidin S.*

In: *J. Mol. Struct.* **646**, 67-74 (2003).