

8 LITERATURVERZEICHNIS

- [1] a) J. M. J. Fréchet, D. A. Tomalia, "Dendrimers and other dendritic polymers", John Wiley & Sons, New York, U.S.A., **2001**.
b) G. R. Newkome, C. N. Moorefield, F. Vögtle, "Dendrimers and Dendrons: Concepts, Synthesis, Applications", Wiley-VCH, Weinheim, Germany, **2001**.
- [2] Für neuere Reviews auf dem Gesamtgebiet, siehe:
a) D. A. Tomalia, J. M. J. Fréchet, "Discovery of dendrimers and dendritic polymers: A brief historical perspective", *J. Polym. Sci., Part A: Polym. Chem.* **2002**, *40*, 2719-2727;
b) S. M. Grayson, J. M. J. Fréchet, "Convergent dendrons and dendrimers: From synthesis to applications", *Chem. Rev.* **2001**, *101*, 3819-3867;
c) M. Fischer, F. Vögtle, „Dendrimere: vom Design zur Anwendung – ein Fortschrittsbericht“, *Angew. Chem.* **1999**, *111*, 934-955; *Angew. Chem., Int. Ed.* **1999**, *38*, 885-905;
d) A. W. Bosman, H. M. Janssen, E. W. Meijer, "About dendrimers: structure, physical properties, and applications", *Chem. Rev.* **1999**, *99*, 1665-1688.
- [3] Für neuere Reviews aus wichtigen Teilbereichen, siehe:
a) M. J. Cloninger, "Biological applications of dendrimers", *Curr. Opin. Chem. Biol.* **2002**, *6*, 742-748;
b) R. Esfand, D. A. Tomalia, "Poly(amidoamine) (PAMAM) dendrimers: from biomimicry to drug delivery and biomedical applications", *Drug Discov. Today* **2001**, *6*, 427-436;
c) G. E. Oosterom, J. N. H. Reek, P. C. J. Kamer, P. W. N. M. van Leeuwen, „Übergangsmetallkatalyse mit funktionalisierten Dendrimern“, *Angew. Chem.* **2001**, *113*, 1878-1901; *Angew. Chem., Int. Ed.* **2001**, *40*, 1828-1849;
d) S. Hecht, J. M. J. Fréchet, „Dendritisch eingeschlossene aktive Zentren: Anwendung des Isolationsprinzips der Natur in der Biomimetik und den Materialwissenschaften“, *Angew. Chem.* **2001**, *113*, 76-94, *Angew. Chem., Int. Ed.* **2001**, *40*, 74-91;
e) M. W. P. L. Baars, E. W. Meijer, "Host-guest chemistry of dendritic molecules", *Top. Curr. Chem.* **2000**, *210*, 131-182;
f) D. K. Smith, F. Diederich, "Functional dendrimers: unique biological mimics", *Chem. Eur. J.* **1998**, *4*, 1353-1361.
- [4] D. N. Reinhoudt, J. F. Stoddart, R. Ungaro, "Supramolecular science – where it is and where it is going", *Chem. Eur. J.* **1998**, *4*, 1349-1351.
- [5] D. A. Tomalia, A. M. Naylor, W. A. Goddard III, "Starburst-Dendrimere: Kontrolle von Größe, Gestalt, Oberflächenchemie, Topologie und Flexibilität beim Übergang von Atomen zu makroskopischer Materie", *Angew. Chem.* **1990**, *102*, 119-157.
- [6] E. Buhleier, W. Wehner, F. Vögtle, "“Cascade”- and “nanoskid-chain-like” synthesis of molecular cavity topologies", *Synthesis* **1978**, 155-158.
- [7] D. A. Tomalia, H. Baker, J. Dewald, M. Hall, G. Kallos, S. Martin, J. Roeck, J. Ryder, P. Smith, "A new class of polymers: Starburst-dendritic macromolecules", *Polym. J.* **1985**, *17*, 117-132.
- [8] G. R. Newkome, Z. Yao, G. R. Baker, V. K. Gupta, "Cascade molecules: A new Approach to micelles. A [27]-Arborol", *J. Org. Chem.* **1985**, *50*, 2003-2004.
- [9] J. C. Hummelen, J. L. J. van Dongen, E. W. Meijer, „Electrospray mass spectrometry of poly(propylene imine) dendrimers - the issue of dendritic purity or polydispersity.“, *Chem. Eur. J.* **1997**, *3*, 1489-1493.
- [10] a) D. A. Tomalia, H. Baker, J. Dewald, M. Hall, G. Kallos, S. Martin, J. Roeck, J. Ryder, P. Smith, "Dendritic macromolecules: Synthesis of Starburst dendrimers", *Macromolecules* **1986**, *19*, 2466-2468;
b) D. M. Watkins, Y. Sayed-Sweet, J. W. Klimash, N. J. Turro, "Dendrimers with hydrophobic cores and the formation of supramolecular dendrimer-surfactant assemblies", *Langmuir* **1997**, *13*, 3136-3141.
- [11] a) G. R. Newkome, Z. Yao, G. R. Baker, V. K. Gupta, P. S. Russo, M. J. Saunders, "Cascade molecules: Synthesis and characterization of a benzene[9]³-arborol", *J. Am. Chem. Soc.* **1986**, *108*, 849-850;
b) G. R. Newkome, C. N. Moorefield, G. R. Baker, A. L. Johnson, R. K. Behera, „Alkan-Kaskadenpolymere mit einer Micellen-Topologie: Micellansäure-Derivate“, *Angew. Chem.* **1991**, *9*, 1205-1207; *Angew. Chem., Int. Ed.* **1991**, *30*, 1178-1180;
c) G. R. Newkome, C. N. Moorefield, G. R. Baker, M. J. Saunders, S. H. Grossman, „Unimolekulare Micellen“, *Angew. Chem.* **1991**, *103*, 1207-1209; *Angew. Chem., Int. Ed.* **1991**, *30*, 1178-1180.
- [12] E. M. M. de Brabander-van den Berg, E. W. Meijer, „Poly(propylenimin)-Dendrimere: Synthese in größerem Maßstab durch heterogen katalysierte Hydrierungen“, *Angew. Chem.* **1993**, *105*, 1370-1372; *Angew. Chem., Int. Ed.* **1993**, *32*, 1308-1311.

- [13] a) L. Brauge, G. Magro, A.-M. Caminade, J.-P. Majoral, "First divergent strategy using two AB₂ unprotected monomers for the rapid synthesis of dendrimers", *J. Am. Chem. Soc.* **2001**, *123*, 6698-6699;
b) V. Maraval, A.-M. Caminade, J.-P. Majoral, J.-C. Blais, "Dendrimer design: How to circumvent the dilemma of a reduction of steps or an increase of function multiplicity", *Angew. Chem.* **2003**, *115*, 1866-1870; *Angew. Chem., Int. Ed.* **2003**, *42*, 1822-1826.
- [14] a) C. J. Hawker, J. M. J. Fréchet, "A New Convergent Approach to Monodisperse Dendritic Macromolecules", *J. Chem. Soc., Chem. Commun.* **1990**, 1010-1013;
b) C. J. Hawker, J. M. J. Fréchet, "Preparation of polymers with controlled molecular architecture. A new convergent approach to dendritic macromolecules", *J. Am. Chem. Soc.* **1990**, *112*, 7638-7647;
c) C. J. Hawker, J. M. J. Fréchet, "Control of surface functionality in the synthesis of dendritic macromolecules using the convergent-growth approach", *Macromolecules* **1990**, *23*, 4726-4729;
d) C. J. Hawker, K. L. Wooley, J. M. J. Fréchet, "Unimolecular micelles and globular amphiphiles: Dendritic macromolecules as novel recyclable solubilization agents", *J. Chem. Soc., Perkin Trans. I* **1993**, 1287-1297;
e) J. M. J. Fréchet, C. J. Hawker, K. L. Wooley, "The convergent route to globular dendritic macromolecules: A versatile approach to precisely functionalized three-dimensional polymers and novel block copolymers", *J. Macromol. Sci., Pure Appl. Chem.* **1994**, *A31*, 1627-1645.
- [15] a) J. S. Moore, Z. Xu, "Synthesis of rigid dendritic macromolecules: Enlarging the repeat unit size as a function of generation permits growth to continue", *Macromolecules* **1991**, *24*, 5893-5894;
b) Z. Xu, J. S. Moore, "Synthese und Charakterisierung eines steifen Dendrimers mit hohem Molekulargewicht", *Angew. Chem.* **1993**, *105*, 261-264; *Angew. Chem., Int. Ed.* **1993**, *32*, 246-248;
c) Z. Xu, M. Kahr, K. L. Walker, C. L. Wilkins, J. S. Moore, "Phenylacetylene dendrimers by the divergent, convergent, and double-stage convergent methods", *J. Am. Chem. Soc.* **1994**, *116*, 4537-4550.
- [16] a) T. M. Miller, T. X. Neenan, "Convergent synthesis of monodisperse dendrimers based upon 1,3,5-trisubstituted benzenes", *Chem. Mater.* **1990**, *2*, 346-349;
b) T. M. Miller, T. X. Neenan, R. Zayas, H. E. Bair, "Synthesis and characterization of a series of monodisperse, 1,3,5-phenylene-based hydrocarbon dendrimers including C₂₇₆H₁₈₆ and their fluorinated analogues", *J. Am. Chem. Soc.* **1992**, *114*, 1018-1025.
- [17] H. Ihre, A. Hult, E. Söderlind, "Synthesis, Characterization, and ¹H NMR Self-Diffusion Studies of Dendritic Aliphatic Polyesters Based on 2,2-Bis(hydroxymethyl)propionic Acid and 1,1,1-Tris(hydroxyphenyl)ethane", *J. Am. Chem. Soc.* **1996**, *118*, 6388-6395.
- [18] K. L. Wooley, C. J. Hawker, J. M. J. Fréchet, "Hyperbranched macromolecules via a novel double-stage convergent growth approach", *J. Am. Chem. Soc.* **1991**, *113*, 4252-4261.
- [19] a) T. Kawaguchi, K. L. Walker, C. L. Wilkins, J. S. Moore, "Double Exponential Dendrimer Growth", *J. Am. Chem. Soc.* **1995**, *117*, 2159-2165;
b) R. Klopsch, P. Franke, A. D. Schlüter, "Repetitive strategy for exponential growth of hydroxy-functionalized dendrons", *Chem. Eur. J.* **1996**, *2*, 1330-1334.
- [20] a) K. L. Wooley, C. J. Hawker, J. M. J. Fréchet, "Verzweigte Monomere als Quelle für einen schnelleren Zugang zu Dendrimeren", *Angew. Chem.* **1994**, *106*, 123-126; *Angew. Chem., Int. Ed.* **1994**, *33*, 82-85;
b) S. L. Gilat, A. Adronov, J. M. J. Fréchet, "Modular Approach to the Accelerated Convergent Growth of Laser Dye-Labeled Poly(aryl ether) Dendrimers Using a Novel Hypermonomer", *J. Org. Chem.* **1999**, *64*, 7474-7484.
- [21] a) R. Spindler, J. M. J. Fréchet, "Two-step approach towards the accelerated synthesis of dendritic macromolecules", *J. Chem. Soc., Perkin Trans. I* **1993**, 913-918;
b) A. W. Freeman, J. M. J. Fréchet, "A Rapid, Orthogonal Synthesis of Poly(benzyl ester) Dendrimers via an "Activated" Monomer Approach", *Org. Lett.* **1999**, *1*, 685-688.
- [22] F. Zeng, S. C. Zimmerman, "Rapid Synthesis of Dendrimers by an Orthogonal Coupling Strategy", *J. Am. Chem. Soc.* **1996**, *118*, 5326-5327.
- [23] S. K. Deb, T. M. Maddux, L. Yu, "A Simple Orthogonal Approach to Poly(phenylenevinylene) Dendrimers", *J. Am. Chem. Soc.* **1997**, *119*, 9079-9080.
- [24] Y. Ishida, M. Jikei, M. Kakimoto, "Rapid Synthesis of Aromatic Polyamide Dendrimers by an Orthogonal and a Double-Stage Convergent Approach", *Macromolecules* **2000**, *33*, 3202-3211.
- [25] V. Swali, N. J. Wells, G. J. Langley, M. Bradley, "Solid-phase dendrimer synthesis and the generation of super-high-loading resin beads for combinatorial chemistry", *J. Org. Chem.* **1997**, *62*, 4902-4903.
- [26] a) R. B. Merrifield, "Solid Phase Peptide Synthesis. I. The Synthesis of a Tetrapeptide", *J. Am. Chem. Soc.* **1963**, *85*, 2149-2154;
b) R. B. Merrifield, "Festphasen-Synthese (Nobel-Vortrag)", *Angew. Chem.* **1985**, *97*, 801-812; *Angew. Chem., Int. Ed.* **1985**, *24*, 799-810;

- c) R. B. Merrifield, "Solid Phase Synthesis", *Science* **1986**, *232*, 341-347.
- [27] a) D. N. Posnett, H. McGrath, J. P. Tam, "A novel method for producing anti-peptide antibodies", *J. Biol. Chem.* **1988**, *263*, 1719-1725;
b) J. P. Tam, "Synthetic peptide vaccine design: Synthesis and properties of a high-density multiple antigenic peptide system", *Proc. Natl. Acad. Sci. U.S.A.* **1988**, *85*, 5409-5413.
- [28] K. Sadler, J. P. Tam, "Peptide dendrimers: applications and synthesis", *Rev. Mol. Biotechnol.* **2002**, *90*, 195-229.
- [29] a) I. R. Marsh, H. Smith, M. Bradley, "Solid phase polyamine linkers – their utility in synthesis and the preparation of directed libraries against trypanothione reductase", *Chem. Commun.* **1996**, 941-942;
b) C. Fromont, M. Bradley, "High-loading resin beads for solid phase synthesis using triple branching symmetrical dendrimers", *Chem. Commun.* **2000**, 283-284.
- [30] A. R. Mitchell, S. B. H. Kent, M. Engelhard, R. B. Merrifield, "A New Synthetic Route to *tert*-Butyloxycarbonylaminoacyl-4-(oxymethyl)phenylacetamidomethyl-resin, an Improved Support for Solid-Phase Peptide Synthesis", *J. Org. Chem.* **1978**, *43*, 2845-2852.
- [31] K. L. Wooley, J. M. J. Fréchet, C. J. Hawker, "Influence of shape on the reactivity and properties of dendritic, hyperbranched and linear aromatic polyesters", *Polymer* **1994**, *35*, 4489-4495.
- [32] C. J. Hawker, E. Malmström, C. W. Frank, J. P. Kampf, "Exact Linear Analogs of Dendritic Polyether Macromolecules: Design, Synthesis, and Unique Properties", *J. Am. Chem. Soc.* **1997**, *119*, 9903-9904.
- [33] T. H. Mourey, S. R. Turner, M. Rubinstein, J. M. J. Fréchet, C. J. Hawker, K. L. Wooley, "Unique behavior of dendritic macromolecules: intrinsic viscosity of polyether dendrimers", *Macromolecules* **1992**, *25*, 2401-2406.
- [34] S. M. Grayson, J. M. J. Fréchet, "Synthesis and Surface Functionalization of Aliphatic Polyether Dendrons", *J. Am. Chem. Soc.* **2000**, *122*, 10335-10344.
- [35] S. Stevelmans, J. C. M. van Hest, J. F. G. A. Jansen, D. A. F. J. van Boxtel, E. M. M. de Brabander-van den Berg, E. W. Meijer, "Synthesis, characterization, and guest-host properties of inverted unimolecular dendritic micelles", *J. Am. Chem. Soc.* **1996**, *118*, 7398-7399.
- [36] M. W. P. L. Baars, P. E. Froehling, E. W. Meijer, "Liquid liquid extractions using poly(propylene imine) dendrimers with an apolar periphery", *Chem. Commun.* **1997**, *20*, 1959-1960.
- [37] G. R. Newkome, J. K. Young, J. R. Baker, R. L. Potter, L. Audoly, D. Cooper, C. D. Weis, K. F. Morris, C. S. Johnson, Jr., "Cascade polymers: pH dependence of hydrodynamic radii of acid terminated dendrimers", *Macromolecules* **1993**, *26*, 2394-2396.
- [38] A. Sideratou, D. Tsiourvas, C. M. Paleos, "Quaternized poly(propyleneimine) dendrimers as novel pH-sensitive controlled-release systems", *Langmuir* **2000**, *16*, 1766-1769.
- [39] a) J. F. G. A. Jansen, E. M. M. de Brabander-van den Berg, E. W. Meijer, "Encapsulation of guest molecules into a dendritic box" *Science* **1994**, *265*, 1226-1229;
b) J. F. G. A. Jansen, E. W. Meijer, "The dendritic box: shape-selective liberation of encapsulated guests", *J. Am. Chem. Soc.* **1995**, *117*, 4417-4418.
- [40] G. R. Newkome, C. D. Weis, C. N. Moorefield, "Detection and functionalization of dendrimers possessing free carboxylic acid moieties", *Macromolecules* **1997**, *30*, 2300-2304.
- [41] P. R. Ashton, S. E. Boyd, C. L. Brown, N. Jayaraman, S. A. Nepogodiev, J. F. Stoddart, "A convergent synthesis of carbohydrate-containing dendrimers", *Chem Eur. J.* **1996**, *2*, 1115-1128.
- [42] H. Frey, C. Lach, K. Lorenz, "Heteroatom-Based Dendrimers", *Adv. Mater.* **1998**, *10*, 279-293.
- [43] V. V. Tsukruk, "Dendritic Macromolecules at Interfaces", *Adv. Mater.* **1998**, *10*, 253-257.
- [44] a) M. Wells, R. M. Crooks, "Interactions between Organized, Surface-Confined Monolayers and Vapor-Phase Probe Molecules. 10. Preparation and Properties of Chemically Sensitive Dendrimer Surfaces", *J. Am. Chem. Soc.* **1996**, *118*, 3988-3989;
b) M. Zhao, R. M. Crooks, "Homogene katalytische Hydrierung mit monodispersen, dendrimerumhüllten Pd- und Pt-Nanopartikeln", *Angew. Chem.* **1999**, *111*, 375-377; *Angew. Chem., Int. Ed.* **1999**, *38*, 364-366.
- [45] M. E. Piotti, F. Rivera Jr., R. Bond, C. J. Hawker, J. M. J. Fréchet, "Synthesis and Catalytic Activity of Unimolecular Dendritic Reverse Micelles with "Internal" Functional Groups", *J. Am. Chem. Soc.* **1999**, *121*, 9471-9472.
- [46] H. Brunner, "Dendrzymes: Expanded ligands for enantioselective catalysis", *J. Organomet. Chem.* **1995**, *500*, 39-46.
- [47] a) J. W. J. Knapen, A. W. van der Made, J. C. de Wilde, P. W. M. van Leeuwen, P. Wijkens, D. M. Grove, G. van Koten, "Homogeneous catalysts based on silane dendrimers functionalized with arylnickel(II) complexes", *Nature* **1994**, *372*, 659-663;

- b) L. A. van de Kuil, D. M. Grove, J. W. Zwikker, L. W. Jenneskens, W. Drenth, G. van Koten, "New Soluble Polysiloxane Polymers Containing a Pendant Terdentate Aryldiamine Ligand Substituent Holding a Highly Catalytically Active Organometallic Nickel(II) Center", *Chem. Mater.* **1994**, *6*, 1675-1683.
- [48] H.-B. Meikelburger, K. Rissanen, F. Vögtle, „Repetitive Synthesis of Bulky Dendrimers – A Reversibly Photoactive Dendrimer with Six Azobenzene Side Chains“, *Chem. Ber.* **1993**, *126*, 1161-1169.
- [49] a) R. Sadamoto, N. Tomioka, T. Aida, "Photoinduced Electron Transfer Reactions through Dendrimer Architecture", *J. Am. Chem. Soc.* **1996**, *118*, 3978-3979;
b) D.-L. Jiang, T. Aida, "Photoisomerization in dendrimers by harvesting of low-energy photons", *Nature* **1997**, *388*, 454-456.
- [50] A. Andronov, J. M. J. Fréchet, "Light-harvesting dendrimers", *Chem. Commun.* **2000**, 1701-1710.
- [51] I. Cuadrado, M. Morán, C. M. Casado, B. Alonso, F. Lobete, B. García, M. Ibisate, J. Losada, "Ferrocenyl-Functionalized Poly(propyleneimine) Dendrimers", *Organometallics* **1996**, *15*, 5278-5280.
- [52] C. Valério, J.-L. Fillaut, J. Ruiz, J. Guittard, J.-C. Blais, D. Astruc, "The Dendritic Effect in Molecular Recognition: Ferrocene Dendrimers and Their Use as Supramolecular Redox Sensors for the Recognition of Small Inorganic Anions", *J. Am. Chem. Soc.* **1997**, *119*, 2588-2589.
- [53] C. M. Cardona, A. E. Kaifer, "Asymmetric Redox-Active Dendrimers Containing a Ferrocene Subunit. Preparation, Characterization, and Electrochemistry", *J. Am. Chem. Soc.* **1998**, *120*, 4023-4024.
- [54] P. J. Dandliker, F. Diederich, A. Zingg, J.-P. Gisselbrecht, M. Gross, A. Louati, E. Sanford, "Dendrimers with Porphyrin Cores: Synthetic Models for Globular Heme Proteins", *Helv. Chim. Acta* **1997**, *80*, 1773-1801.
- [55] C. B. Gorman, B. L. Parkhurst, W. Y. Su, K.-Y. Chen, "Encapsulated Electroactive Molecules Based Upon an Inorganic Cluster Surrounded by Dendron Ligands", *J. Am. Chem. Soc.* **1997**, *119*, 1141-1142.
- [56] a) V. Percec, G. Johansson, G. Ungar, J. Zhou, "Fluorophobic Effect Induces the Self-Assembly of Semifluorinated Tapered Monodendrons Containing Crown Ethers into Supramolecular Columnar Dendrimers Which Exhibit a Homeotropic Hexagonal Columnar Liquid Crystalline Phase", *J. Am. Chem. Soc.* **1996**, *118*, 9855-9866;
b) V. Percec, D. Schlueter, "Mechanistic Investigations on the Formation of Supramolecular Cylindrical Shaped Oligomers and Polymers by Living Ring Opening Metathesis Polymerization of a 7-Oxanorbornene Monomer Substituted with Two Tapered Monodendrons", *Macromolecules* **1997**, *30*, 5783-5790;
c) V. S. K. Balagurusamy, G. Ungar, V. Percec, G. Johansson, "Rational Design of the First Spherical Supramolecular Dendrimers Self-Organized in a Novel Thermotropic Cubic Liquid-Crystalline Phase and the Determination of Their Shape by X-ray Analysis", *J. Am. Chem. Soc.* **1997**, *119*, 1539-1555;
d) V. Percec, C.-H. Ahn, B. Barboiu, "Self-Encapsulation, Acceleration and Control in the Radical Polymerization of Monodendritic Monomers via Self-Assembly", *J. Am. Chem. Soc.* **1997**, *119*, 12978-12979;
e) S. D. Hudson, H. T. Jung, V. Percec, W.-D. Cho, G. Johansson, G. Ungar, V. S. K. Balagurusamy, "Direct Visualization of Individual Cylindrical and Spherical Supramolecular Dendrimers", *Science* **1997**, *278*, 449-452;
f) V. Percec, C.-H. Ahn, G. Ungar, D. J. P. Yearley, M. Möller, S. S. Sheiko, "Controlling polymer shape through the self-assembly of dendritic side-groups", *Nature* **1998**, *391*, 161-164;
g) V. Percec, C.-H. Ahn, W.-D. Cho, A. M. Jamieson, J. Kim, T. Leman, M. Schmidt, M. Gerle, M. Möller, S. A. Prokhorova, S. S. Sheiko, S. Z. D. Cheng, A. Zhang, G. Ungar, D. J. P. Yearley, "Visualizable Cylindrical Macromolecules with Controlled Stiffness from Backbones Containing Libraries of Self-Assembling Dendritic Side Groups", *J. Am. Chem. Soc.* **1998**, *120*, 8619-8631;
h) V. Percec, W.-D. Cho, P. E. Mosier, G. Ungar, D. J. P. Yearley, "Structural Analysis of Cylindrical and Spherical Supramolecular Dendrimers Quantifies the Concept of Monodendron Shape Control by Generation Number", *J. Am. Chem. Soc.* **1998**, *120*, 11061-11070.
- [57] D. J. Pesak, J. S. Moore, „Kolumnare Flüssigkristalle aus formbeständigen, dendritischen Molekülen“, *Angew. Chem.* **1997**, *109*, 1709-1712; *Angew. Chem., Int. Ed.* **1997**, *36*, 1636-1639.
- [58] M. W. P. L. Baars, S. H. M. Söntjes, H. M. Fischer, H. W. I. Peerlings, E. W. Meijer, "Liquid-Crystalline Properties of Poly(propylene imine) Dendrimers Functionalized with Cyanobiphenyl Mesogens at the Periphery", *Chem. Eur. J.* **1998**, *4*, 2456-2466.
- [59] F. Zeng, S. C. Zimmerman, "Dendrimers in Supramolecular Chemistry: From Molecular Recognition to Self-Assembly", *Chem. Rev.* **1997**, *97*, 1681-1712.
- [60] G. R. Newkome, B. D. Woosley, E. He, C. N. Moorefield, R. Guther, G. R. Baker, G. H. Escamilla, J. Merrill, H. Luftmann, "Supramolecular chemistry of flexible, dendritic-based structures employing molecular recognition", *Chem. Commun.* **1996**, 2737-2738.
- [61] D. M. Watkins, Y. Sayed-Sweet, J. W. Klimash, N. J. Turro, D. A. Tomalia, "Dendrimers with Hydrophobic Cores and the Formation of Supramolecular Dendrimer-Surfactant Assemblies", *Langmuir* **1997**, *13*, 3136-3141.

- [62] D.-L. Jiang, T. Aida, "A dendritic iron porphyrin as a novel haemoprotein mimetic : effects of the dendrimer cage on dioxygen-binding activity", *Chem. Commun.* **1996**, 1523-1524.
- [63] J. P. Collman, L. Fu, A. Zingg, F. Diederich, "Dioxygen and carbon monoxide binding in dendritic iron(II)porphyrins", *Chem. Commun.* **1997**, 193-194.
- [64] Y. Kim, S. C. Zimmerman, "Applications of dendrimers in bio-organic chemistry", *Curr. Opin. Chem. Biol.* **1998**, 2, 733-742.
- [65] R. F. Service, "Dendrimers: Dream Molecules Approach Real Applications", *Science* **1995**, 267, 458-459.
- [66] W. Krause, N. Hackmann-Schlichter, F. K. Maier, R. Müller, „Dendrimers in Diagnostics“, in: *Topics in Current Chemistry*, 210, 261-308, Springer-Verlag, Berlin, Heidelberg, **2000**.
- [67] M. Liu, J. M. J. Fréchet, "Designing dendrimers for drug delivery", *Pharm. Sci. Technol. Today* **1999**, 2, 393-401.
- [68] J. Haensler, F. C. Szoka Jr., "Polyamidoamine cascade polymers mediate efficient transfection of cells in culture", *Bioconj. Chem.* **1993**, 4, 372-379.
- [69] J. F. Kukowska-Latallo, U. A. Bielinska, J. Johnson, R. Spindler, D. A. Tomalia, J. R. Baker Jr., "Efficient transfer of genetic material into mammalian cells using Starburst polyamidoamine dendrimers", *Proc. Natl. Acad. Sci. U.S.A.* **1996**, 4897-4902.
- [70] R. DeLong, K. Stephenson, T. Loftus, M. Fisher, S. Alahari, A. Nolting, R. L. Juliano, "Characterization of complexes of oligonucleotides with polyamidoamine starburst dendrimers and effects on intracellular delivery", *J. Pharm. Sci.* **1997**, 86, 762-764.
- [71] M. S. Shchepinov, I. A. Udalova, A. J. Bridgman, E. M. Southern, "Oligonucleotide dendrimers: synthesis and use as polylabelled DNA probes", *Nucl. Acids Res.* **1997**, 25, 4447-4454.
- [72] A. U. Bielinska, C. Chen, J. Johnson, J. R. Baker Jr., "DNA complexing with polyamidoamine dendrimers: implications for transfection", *Bioconj. Chem.* **1999**, 10, 843-850.
- [73] M. X. Tang, C. T. Redemann, F. C. Szoka Jr., "In vitro gene delivery by degraded polyamidoamine dendrimers", *Bioconj. Chem.* **1996**, 7, 703-714.
- [74] A. Bielinska, J. F. Kukowska-Latallo, J. Johnson, D. A. Tomalia, J. R. Baker Jr., "Regulation of in vitro gene expression using antisense oligonucleotides or antisense expression plasmids transfected using starburst PAMAM dendrimers", *Nucleic Acids Res.* **1996**, 24, 2176-2181.
- [75] R. B. Lauffer, "Paramagnetic metal complexes as water proton relaxation agents for NMR imaging: theory and design", *Chem. Rev.* **1987**, 87, 901-927.
- [76] U. Schmiedl, R. E. Sievers, R. C. Brasch, C. L. Wolfe, W. M. Chew, M. D. Ogan, H. Engeseth, M. J. Lipton, M. E. Moseley, "Acute myocardial ischemia and reperfusion: MR imaging with albumin-Gd-DTPA", *Radiology* **1989**, 170, 351-356.
- [77] S. C. Wang, M. G. Wikström, D. L. White, J. Klaveness, E. Holtz, P. Rongved, M. E. Moseley, R. C. Brasch, "Evaluation of Gd-DTPA-labeled dextran as an intravascular MR contrast agent: imaging characteristics in normal rat tissues", *Radiology* **1990**, 175, 483-488.
- [78] G. Schuhmann-Giampieri, H. Schmitt-Willich, T. Frenzel, W.-R. Press, H.-J. Weinmann, "In vivo and in vitro evaluation of gadolinium-DTPA-polylysine as a macromolecular contrast agent for magnetic resonance imaging", *Invest. Radiol.* **1991**, 26, 969-974.
- [79] a) E. C. Wiener, M. W. Brechbiel, H. Brothers, R. L. Magin, O. A. Gansow, D. A. Tomalia, P. C. Lauterbur, "Dendrimer-based metal chelates: a new class of magnetic resonance imaging contrast agents", *Magn. Reson. Med.* **1994**, 31, 1-8;
b) S. D. Konda, S. Wang, M. Brechbiel, E. C. Wiener, "Biodistribution of a ^{153}Gd -Folate dendrimer, Generation = 4, in Mice With Folate-Receptor Positive and Negative Ovarian Tumor Xenografts", *Invest. Radiol.* **2002**, 37, 199-204.
- [80] É. Tóth, D. Pubanz, S. Vauthey, L. Helm, A. E. Merbach, "The Role of Water Exchange in Attaining Maximum Relaxivities for Dendrimeric MRI Contrast Agents", *Chem. Eur. J.* **1996**, 2, 1607-1615.
- [81] H. Kobayashi, S. Kawamoto, T. Saga, N. Sato, T. Ishimori, J. Konishi, K. Ono, K. Togashi, M. W. Brechbiel, "Avidin-dendrimer-(1B4M-Gd)₂₅₄: A Tumor-Targeting Therapeutic Agent for Gadolinium Neutron Capture Therapy of Intraperitoneal Disseminated Tumor Which Can Be Monitored by MRI", *Bioconjugate Chem.* **2001**, 12, 587-593.
- [82] E. C. Wiener, F. P. Auteri, J. W. Chen, M. W. Brechbiel, O. A. Gansow, D. S. Schneider, R. L. Belford, R. B. Clarkson, P. C. Lauterbur, "Molecular Dynamics of Ion-Chelate Complexes Attached to Dendrimers", *J. Am. Chem. Soc.* **1996**, 118, 7774-7782.

- [83] a) B. Radüchel, H. Schmitt-Willich, J. Platzek, W. Ebert, T. Frenzel, B. Misselwitz, H.-J. Weinmann, "Synthesis and characterization of novel dendrimer-based gadolinium complexes as MRI contrast agents for the vascular system", *Polym. Mater. Sci. Eng.* **1998**, *79*, 516-517;
- b) B. Misselwitz, H. Schmitt-Willich, W. Ebert, T. Frenzel, H.-J. Weinmann, "Pharmacokinetics of Gadomer-17, a new dendritic magnetic resonance contrast agent", *Magn. Reson. Mater. Phys. Biol. Med.* **2001**, *12*, 128-134.
- [84] P. Singh, F. Moll, S. H. Lin, C. Ferzli, S. K. Yu, R. K. Koski, R. G. Saul, P. Cronin, "Starburst dendrimers: enhanced performance and flexibility for immunoassays", *Clin. Chem.* **1994**, *40*, 1845-1849.
- [85] a) D. N. Posnett, H. McGrath, J. P. Tam, "A Novel Method for Producing Anti-peptide Antibodies", *J. Biol. Chem.* **1988**, *263*, 1719-1725;
- b) J. P. Tam, "Synthetic peptide vaccine design: Synthesis and properties of a high-density multiple antigenic peptide system", *Proc. Natl. Acad. Sci. U.S.A.* **1988**, *85*, 5409-5413.
- [86] a) C. Rao, J. P. Tam, "Synthesis of Peptide Dendrimer", *J. Am. Chem. Soc.* **1994**, *116*, 6975-6976;
- b) J. Shao, J. P. Tam, "Unprotected Peptides as Building Blocks for the Synthesis of Peptide Dendrimers with Oxime, Hydrazone, and thiazolidine Linkages", *J. Am. Chem. Soc.* **1995**, *117*, 3893-3899;
- c) T. D. Pallin, J. P. Tam, "Assembly of cyclic peptide dendrimers from unprotected linear building blocks in aqueous solution", *Chem. Commun.* **1996**, 1345-1346;
- d) L. Zhang, J. P. Tam, "Synthesis and Application of Unprotected Cyclic Peptides as Building Blocks for Peptide Dendrimers", *J. Am. Chem. Soc.* **1997**, *119*, 2363-2370.
- [87] A. H. Soloway, W. Tjarks, B. A. Barnum, F.-G. Rong, R. F. Barth, I. M. Codogni, J. G. Wilson, "The Chemistry of Neutron Capture Therapy", *Chem. Rev.* **1998**, *98*, 1515-1562.
- [88] H. Nemoto, J. G. Wilson, H. Nakamura, Y. Yamamoto, "Polyols of a Cascade Type as a Water-Solubilizing Element of Carborane Derivatives for Boron Neutron Capture Therapy", *J. Org. Chem.* **1992**, *57*, 435-435.
- [89] D. Armspach, M. Cattalini, E. C. Constable, C. E. Housecroft, D. Phillips, "Boron-rich metallodendrimers - mix-and-match assembly of multifunctional metallosupramolecules", *Chem. Commun* **1996**, 1823-1824.
- [90] G. R. Newkome, C. N. Moorefield, J. N. Keith, G. R. Baker, G. H. Escamilla, "Chemische Umsetzungen im Inneren einer Vorstufe von unimolekularen Micellen: Bor-Supercluster durch ortsspezifische Addition von H₁₀H₁₄ an Kaskadenmoleküle", *Angew. Chem.* **1994**, *106*, 701-703; *Angew. Chem., Int. Ed.* **1994**, *33*, 666-668.
- [91] B. Qualmann, M. M. Kessels, H.-J. Musiol, W. D. Sierralta, P. W. Jungblut, L. Moroder, "Synthese Borreicher Lysindendrimere zur Proteinmarkierung in der Elektronenmikroskopie", *Angew. Chem.* **1996**, *108*, 970-973; *Angew. Chem., Int. Ed.* **1996**, *35*, 909-911.
- [92] R. F. Barth, D. M. Adams, A. H. Soloway, F. Alam, M. V. Darby, "Boronated Starburst Dendrimer-Monoclonal Antibody Immunoconjugates: Evaluation as a Potential Delivery System for Neutron Capture Therapy", *Bioconjugate Chem.* **1994**, *5*, 58-66.
- [93] N. Malik, E. G. Evagorou, R. Duncan, "Dendrimer-platinate: a novel approach to cancer chemotherapy", *Anti-Cancer Drugs* **1999**, *10*, 767-776.
- [94] K. Kono, M. Liu, J. M. J. Fréchet, "Design of Dendritic Macromolecules Containing Folate or Methotrexate Residues", *Bioconj. Chem.* **1999**, *10*, 1115-1121.
- [95] a) M. Liu, K. Kono, J. M. J. Fréchet, "Water-soluble dendrimers as potential drug carriers", *Polym. Mater. Sci. Eng.* **1998**, *79*, 269-270.
- b) M. Liu, K. Kono, J. M. J. Fréchet, "Water-soluble dendrimer-poly(ethylene glycol) starlike conjugates as potential drug carriers", *J. Polym. Sci., Part A: Polym. Chem.* **1999**, *37*, 3492-3503.
- [96] Für eine Übersicht über das Gebiet der Dendrimer-Wirkstoff-Konjugate, siehe:
A. K. Patri, I. J. Majoros, J. R. Baker Jr., "Dendritic polymer macromolecular carriers for drug delivery", *Curr. Opin. Chem. Biol.* **2002**, *6*, 466-471.
- [97] a) R. Gust, R. Krauser, B. Schmid, H. Schönenberger, "Breast Cancer Inhibiting Diastereomeric Diacetato[1,2-bis(4-fluorophenyl)ethylenediamine]platinum(II) Derivatives – Synthesis and Studies on the Relationship between Reactivity and Antitumor Activity", *Inorg. Chim. Acta* **1996**, *250*, 203-218;
- b) R. Gust, G. Bernhardt, M. Koch, R. Krauser, B. Schmid, E. Hummel, H. Schönenberger, "Stability and Cellular Studies of [rac-1,2-Bis(4-fluorophenyl)ethylenediamine][cyclobutane-1,1-dicarboxylato]platinum(II), a Novel, Highly Active Carboplatin Derivative", *J. Cancer Res. Clin. Oncol.* **1998**, *124*, 585-597;
- c) R. Gust, R. Krauser, B. Schmid, H. Schönenberger, "Synthesis and antitumor activity of [1,2-bis(4-fluorophenyl)ethylenediamine][dicarboxylato]platinum(II) complexes", *Arch. Pharm. Pharm. Med. Chem.* **1998**, *331*, 27-35;
- d) G. Bernhardt, M. Koch, T. Spruß, R. Gust, R. Krauser, R. Schlemmer, H. Schönenberger, "[meso-1,2-Bis(2,6-dichloro-4-hydroxyphenyl)ethylenediamine]sulfatoplatinum(II) – Pharmacokinetic Studies", *Arch. Pharm. Pharm. Med. Chem.* **1999**, *332*, 195-200;

- e) R. Gust, H. Heinrich, R. Krauser, H. Schönenberger, “[Meso- and rac-1,2-bis(4-fluorophenyl)-ethylenediamine]chloro[sulfinylbis(methane-S)]platinum(II) chloride, new soluble platinum complexes with high anti-breast cancer activities”, *Inorg. Chim. Acta* **1999**, *285*, 184-189.
- [98] a) I. Fichtner, R. Reszka, S. R. Goan, H. Naundorf, “Carboplatin-Liposomes (CPL) in Immunodeficient Mice: Improved Antitumor Activity for Breast Carcinomas and Stimulation of Hematopoiesis”, *Med. Oncol.* **1994**, *11*, 111-119;
- b) P. K. Working, M. S. Newman, T. Sullivan, M. Brunner, M. Podell, Z. Sahenk, N. Turner, “Comparative Intravenous Toxicity of Cisplatin Solution and Cisplatin Encapsulated in Long-Circulating, Pegylated Liposomes in Cynomolgus Monkeys”, *Toxicol. Sci.* **1998**, *46*, 155-165.
- [99] a) F. Kratz, U. Beyer, T. Roth, M. T. Schütte, A. Unold, H. H. Fiebig, C. Unger, “Albumin conjugates of the anticancer drug chlorambucil: Synthesis, characterization, and in vitro efficacy”, *Arch. Pharm. Pharm. Med. Chem.* **1998**, *331*, 47-53;
- b) U. Beyer, T. Roth, P. Schumacher, G. Maier, A. Unold, A. W. Frahm, H. H. Fiebig, C. Unger, F. Kratz, “Synthesis and in vitro efficacy of transferrin conjugates of the anticancer drug chlorambucil”, *J. Med. Chem.* **1998**, *41*, 2701-2708.
- [100] L. Sheh, H. W. Wang, C. W. Ong, S. L. Chen, C. Bailly, R. C. Linssen, M. J. Waring, “Synthesis, DNA-binding, and sequence specificity of DNA alkylation by some novel cyclic peptide-chlorambucil conjugates”, *Anti-Cancer Drug Des.* **1995**, *10*, 373-388.
- [101] J. Liao, R. X. Zhuo, “Synthesis, hydrolysis, and antitumor activity of conjugates of 5-fluorouracil with poly(L-lysine)”, *Polym. J.* **1993**, *25*, 401-405.
- [102] a) R. Duncan, L. W. Seymour, K. B. O'Hare, P. A. Flanagan, S. Wedge, I. C. Hume, K. Ulbrich, J. Strohm, V. Subr, F. Spreafico, M. Grandi, M. Ripamonti, M. Farao, A. Suarato, “Preclinical evaluation of polymer-bound doxorubicin”, *J. Controlled Release* **1992**, *19*, 331-346;
- b) P. J. Julyan, L. W. Seymour, D. R. Ferry, S. Daryani, C. M. Boivin, J. Doran, M. David, D. Anderson, C. Christodoulou, A. M. Young, S. Hesselwood, D. J. Kerr, “Preliminary clinical study of the distribution of HMPA copolymers bearing doxorubicin and galactosamine”, *J. Controlled Release* **1999**, *57*, 281-290.
- [103] C. Li, D. F. Yu, R. A. Newman, F. Cabral, L. C. Stephens, N. Hunter, L. Milas, S. Wallace, “Complete regression of well-established tumors using a novel water-soluble poly(L-glutamic acid)-paclitaxel conjugate”, *Cancer Res.* **1998**, *58*, 2404-2409.
- [104] E. Gianasi, M. Wasil, E. G. Evagorou, A. Keddle, G. Wilson, R. Duncan, “HMPA Copolymer Platinates as Novel Antitumour Agents: *In Vitro* Properties, Pharmacokinetics, and Antitumour Activity *In Vivo*”, *Eur. J. Cancer* **1999**, *35*, 994-1002.
- [105] R. X. Zhuo, B. Du, Z. R. Lu, “In vitro release of 5-fluorouracil with cyclic core dendritic polymer”, *J. Controlled Release* **1999**, *57*, 249-257.
- [106] N. Malik, E. G. Evagorou, R. Duncan, “Dendrimer-platinate: a novel approach to cancer chemotherapy”, *Anti-Cancer Drugs* **1999**, *10*, 767-776.
- [107] B. A. J. Jansen, J. van der Zwan, J. Reedijk, H. den Dulk, J. Brouwer, „A Tetranuclear Platinum Compound Designed to Overcome Cisplatin Resistance“, *Eur. J. Inorg. Chem.* **1999**, 1429-1433.
- [108] J. C. Roberts, M. K. Bhalagat, R. T. Zera, “Preliminary biological evaluation of polyamidoamine (PAMAM) Starburst™ dendrimers”, *J. Biomed. Mater. Res.* **1996**, *30*, 53-65.
- [109] R. Klopsch, S. Koch, A. D. Schlüter, “Amino-Functionalized, Second-Generation Dendritic Building Blocks”, *Eur. J. Org. Chem.* **1998**, *7*, 1275-1283.
- [110] a) O. Heudi, S. Mercier-Jobard, A. Cailleux, P. Allain, “Mechanisms of Reaction of L-Methionine with Carboplatin and Oxaliplatin in Different Media: a Comparison with Cisplatin”, *Biopharm. Drug Dispos.* **1999**, *20*, 107-116;
- b) M. El-Khateeb, T. G. Appleton, L. R. Gahan, B. G. Charles, S. J. Berners-Price, A.-M. Bolton, “Reactions of cisplatin hydrolytes with methionine, cysteine, and plasma ultrafiltrate studied by a combination of HPLC and NMR techniques”, *J. Inorg. Biochem.* **1999**, *77*, 13-21;
- c) M. Hahn, D. Wolters, W. S. Sheldrick, F. B. Hulsbergen, J. Reedijk, „[Pt(dien)]²⁺ migrates intramolecularly from methionine S to imidazole N_{ε2} in the peptides H-His-Gly-Met-OH and Ac-His-Ala-Ala-Ala-Met-NHPh”, *J. Biol. Inorg. Chem.* **1999**, *4*, 412-420.
- [111] a) V. Turk, B. Turk, D. Turk, “Lysosomal cysteine proteases: facts and opportunities”, *EMBO J.* **2001**, *20*, 4629-4633;
- b) F. Lecaille, J. Kaleta, D. Brömme, “Human and Parasitic Papain-Like Cysteine Proteases: Their Role in Physiology and Pathology and Recent Developments in Inhibitor Design”, *Chem. Rev.* **2002**, *102*, 4459-4488.

- [112] S.-E. Stiriba, H. Frey, R. Haag, "Dendritische Polymere für medizinische Anwendungen: auf dem Weg zum Einsatz in Diagnostik und Therapie", *Angew. Chem.* **2002**, *114*, 1385-1334; *Angew. Chem., Int. Ed.* **2002**, *114*, 1385-1334.
- [113] W. Kaim, B. Schwederski, „Bioanorganische Chemie – Zur Funktion chemischer Elemente in Lebensprozessen“, *Teubner Studienbücher Chemie*, B. G. Teubner, Stuttgart, 2. Aufl. **1995**, 369-378.
- [114] a) A. Pasini, F. Zunino, „Neue Cisplatin-Analoga – auf dem Weg zu besseren Cancerostatica“, *Angew. Chem.* **1987**, *99*, 632-641; *Angew. Chem., Int. Ed.* **1987**, *99*, 632-641;
b) E. Wong, C. M. Giandomenico, "Current Status of Platinum-Based Antitumor Drugs", *Chem. Rev.* **1999**, *99*, 2451-2466.
- [115] B. Rosenberg, L. VanCamp, T. Krigas, "Inhibition of Cell Division in *Escherichia coli* by Electrolysis Products from a Platinum Electrode", *Nature* **1965**, *205*, 698-699.
- [116] B. Rosenberg, L. VanCamp, J. E. Trosko, V. H. Mansour, "Platinum Compounds: a New Class of Potent Antitumor Agents", *Nature* **1969**, *222*, 385-386.
- [117] B. Rosenberg, L. VanCamp, "The successful regression of large solid sarcoma 180 tumors by platinum compounds", *Cancer Res.* **1970**, *30*, 1799-1802.
- [118] a) S. E. Sherman, S. J. Lippard, "Structural Aspects of Platinum Anticancer Interactions with DNA", *Chem. Rev.* **1987**, *87*, 1153-1181;
b) J. Reedijk, "The relevance of hydrogen bonding in the mechanism of action of platinum antitumor compounds", *Inorg. Chim. Acta* **1992**, *198-200*, 873-881;
c) H. Brunner, G. Sperl, „Synthese und Antitumoraktivität von *cis*-Dichloroplatin(II)-Komplexen mit Östradiolderivaten“, *Monatsh. Chem.* **1993**, *124*, 83-102;
d) A. Galasco, S. J. Lippard, "NMR Solution Structure of a DNA Dodecamer Duplex Containing a *cis*-Diammineplatinum(II) d(GpG) Intrastrand Cross-Link, the Major Adduct of the Anticancer Drug Cisplatin", *Biochemistry* **1998**, *37*, 9230-9239;
e) J. Reedijk, "Why Does Cisplatin Reach Guanine-N7 with Competing S-Donor Ligands Available in the Cell?", *Chem. Commun.* **1999**, *99*, 2499-2510;
f) V. Marchán, V. Moreno, E. Pedroso, A. Grandas, "Towards a better Understanding of the Cisplatin Mode of Action", *Chem. Eur. J.* **2001**, *7*, 808-815.
- [119] E. R. Jamieson, S. J. Lippard, "Structure, Recognition, and Processing of Cisplatin-DNA Adducts", *Chem. Rev.* **1999**, *99*, 2467-2498.
- [120] J. Reedijk, "The relevance of hydrogen bonding in the mechanism of action of platinum antitumor compounds", *Inorg. Chim. Acta* **1992**, *198-200*, 873-881.
- [121] F. Zunino, G. Savi, A. Pasini, "Synthesis and antitumor activity of a platinum(II)-doxorubicin complex", *Cancer Chemother. Pharmacol.* **1986**, *18*, 180-182.
- [122] a) Y. He, S. Groleau, R. C. Gaudreault, M. Caron, H.-M. Thérion, G. Bérube, "Synthesis and *in vitro* biological evaluation of new triphenylethylene platinum (II) complexes", *Bioorg. Med. Chem. Lett.* **1995**, *5*, 2217-2222;
b) R. Gust, K. Niebler, H. Schönenberger, "Investigation of the Configurational and Conformational Influences on the Hormonal Activity of 1,2-Bis(2,6-dichloro-4-hydroxyphenyl)ethylenediamines and of their Platinum(II) Complexes. 1. Synthesis, Estradiol Receptor Affinity, and Estrogenic Activity of Diastereomeric [N-Alkyl- and N,N'-Dialkyl-1,2-bis(2,6-dichloro-4-hydroxyphenyl)ethylenediamine] dichloroplatinum(II) Complexes", *J. Med. Chem.* **1995**, *38*, 2070-2079.
- [123] L. S. Hollis, A. V. Miller, A. R. Amudsen, J. E. Schurig, E. W. Stern, "*cis*-Diammineplatinum(II) Complexes Containing Phosphono Carboxylate Ligands as Antitumor Agents", *J. Med. Chem.* **1990**, *33*, 105-111.
- [124] H. Ringsdorf, "Structure and properties of pharmacologically active polymers", *J. Polym. Sci., Polym. Symp.* **1975**, *51*, 135-153.
- [125] a) R. Duncan, "Drug-polymer conjugates: potential for improved chemotherapy", *Anti-Cancer Drugs* **1992**, *3*, 175-210;
b) H. Maeda, L. M. Seymour, Y. Miyamoto, "Conjugates of anticancer agents and polymers: advantages of macromolecular therapeutics *in vivo*", *Bioconjugate Chem.* **1992**, *3*, 351-362;
c) D. Putnam, J. Kopeček, "Polymer conjugates with anticancer activity", *Adv. Polym. Sci.* **1995**, *122*, 55-123.
- [126] a) P. R. Cullis, L. D. Mayer, M. B. Bally, T. D. Madden, M. J. Hope, "Generating and loading of liposomal systems for drug-delivery applications", *Adv. Drug Deliv. Rev.* **1989**, *3*, 267-282;
b) D. C. Litzinger, L. Huang, "Phosphatidylethanolamine liposomes: drug delivery, gene transfer and immunodiagnostic applications", *Biochim. Biophys. Acta* **1992**, *1113*, 201-227;

- c) B. J. Lestini, S. M. Sagnella, Z. Xu, M. S. Shive, N. J. Richter, J. Jayaseharan, A. J. Case, K. Kottke-Marchant, J. M. Anderson, R. E. Marchant, "Surface modifications of liposomes for selective cell targeting in cardiovascular drug delivery", *J. Controlled Release* **2002**, *78*, 235-247.
- [127] a) S. J. Douglas, S. S. Davis, L. Illum, "Nanoparticles in Drug Delivery", *Crit. Rev. Ther. Drug Carrier Syst.* **1987**, *3*, 233-261;
b) P. Couvreur, L. Roblot-Treupel, M. F. Poupon, F. Brasseur, F. Puisieux, "Nanoparticles as microcarriers for anticancer drugs", *Adv. Drug Deliv. Rev.* **1990**, *5*, 209-230;
c) P. Couvreur, C. Vauthier, "Polyalkylcyanoacrylate nanoparticles as drug carrier: present state and perspectives", *J. Controlled Release* **1991**, *17*, 187-198.
- [128] a) C. E. Pfeifle, S. B. Howell, L. Ashburn, R. M. Barone, J. J. Bookstein, "Pharmacologic studies of intra-hepatic artery chemotherapy with degradable starch microspheres", *Cancer Drug Deliv.* **1986**, *3*, 1-14;
b) R. L. Juliano, "Factors affecting the clearance kinetics and tissue distribution of liposomes, microspheres and emulsions", *Adv. Drug Del. Rev.* **1988**, *2*, 31-54;
c) J. Hanes, M. Chiba, R. Langer, "Degradation of porous poly(anhydride-co-imide) microspheres and implications for controlled macromolecule delivery", *Biomaterials* **1998**, *19*, 163-172;
d) E. R. Gillies, J. M. J. Fréchet, "A new approach towards acid sensitive copolymer micelles for drug delivery", *Chem. Commun.* **2003**, 1640-1641.
- [129] a) C. M. Dorski, F. J. Doyle, N. A. Peppas, "Preparation and characterization of glucose-sensitive P(MAA-g-EG) hydrogels", *Polym. Mater. Sci. Eng. Proc.* **1997**, *6*, 281-282;
b) Y. Luo, K. R. Kirker, G. D. Prestwich, "Cross-linked hyaluronic acid hydrogel films: new biomaterials for drug delivery", *J. Controlled Release* **2000**, *69*, 169-184.
- [130] a) D. M. Neville Jr., J. Scharff, K. Srinivasachar, "Anti-T cell immunotoxins: a look at post-endocytotic receptor-mediated routing", *J. Controlled Release* **1993**, *24*, 133-144;
b) R. J. Kreitman, I. Pastan, "Immunotoxins for targeted cancer therapy", *Adv. Drug Del. Rev.* **1998**, *31*, 53-88;
c) P. J. Hudson, "Recombinant antibody constructs in cancer therapy", *Curr. Opin. Immunol.* **1999**, *11*, 548-557;
d) R. J. Kreitman, "Toxin-labeled monoclonal antibodies", *Curr. Pharm. Biotechnol.* **2001**, *2*, 313-325;
e) L. J. Presta, "Engineering antibodies for therapy", *Curr. Pharm. Biotechnol.* **2002**, *3*, 237-256.
- [131] J. G. Shiah, M. Dvorák, P. Kopecková, Y. Sun, C. M. Peterson, J. Kopeček, "Biodistribution and antitumor efficacy of long-circulating N-(2-hydroxypropyl)methacrylamide copolymer-doxorubicin conjugates in nude mice", *Eur. J. Cancer* **2001**, *37*, 131-139.
- [132] a) L. W. Seymour, "Passive Tumor Targeting of Soluble Macromolecules and Drug Conjugates", *Crit. Rev. Ther. Drug* **1992**, *9*, 135-187;
b) T. Matsumura, H. Maeda, "A New Concept for Macromolecular Therapeutics in Cancer Chemotherapy: Mechanism of Tumor-tropic Accumulation of Proteins and the Antitumor Agent SMANCS", *Cancer Res.* **1986**, *46*, 6387-6392;
c) R. Duncan, "Polymer conjugates for tumour targeting and intracytoplasmic delivery. The EPR effect as a common gateway?", *Pharm. Sci. Technol. Today* **1999**, *2*, 441-449;
d) H. Maeda, J. Wu, T. Sawa, Y. Matsumura, K. Hori, "Tumor Vascular Permeability and the EPR Effect in Macromolecular Therapeutics: A Review", *J. Controlled Release* **2000**, *65*, 271-284.
- [133] H. F. Dullens, R. A. De Weger, C. Vennegoor, W. Den Otter, "Anti-tumour effect of chlorambucil-antibody complexes in a murine melanoma system", *Eur. J. Cancer* **1979**, *15*, 69-75.
- [134] M. Guo, H. Sun, H. J. McArdle, L. Gambling, P. J. Sadler, "Ti^{IV} Uptake and release by Human Serum Transferrin and Recognition of Ti^{IV}-Transferrin by Cancer Cells: Understanding the Mechanism of Action of the Anticancer Drug Titanocene Dichloride", *Biochemistry* **2000**, *39*, 10023-10033.
- [135] S.-C. Song, Y. S. Sohn, "Synthesis and hydrolytic properties of polyphosphazene/(diamine)platinum/saccharide conjugates", *J. Controlled Release* **1998**, *55*, 161-170.
- [136] K. S. Schmidt, M. Boudvillain, A. Schwartz, G. A. van der Marel, J. H. van Boom, J. Reedijk, B. Lippert, "Monofunctionally *trans*-Diammine Platinum (II)-Modified Peptide Nucleic Acid Oligomers: A New Generation of Potential Antisense Drugs", *Chem. Eur. J.* **2002**, *8*, 5566-5570.
- [137] J. Kopeček, P. Kopečková, T. Minko, Z.-R. Lu, "HPMA copolymer-anticancer drug conjugates: design, activity, and mechanism of action", *Eur. J. Pharm. Biopharm.* **2000**, *50*, 61-81.
- [138] L. Šprincl, J. Exner, O. Štěřba, J. Kopeček, "New types of synthetic infusion solutions. III. Elimination and retention of poly[N-(2-hydroxypropyl)methacrylamide] in a test organism", *J. Biomed. Mater. Res.* **1976**, *10*, 953-963.

- [139] a) B. Říhová, J. Kopeček, K. Ulbrich, J. Pospíšil, P. Mančal, "Effect of the chemical structure of *N*-(2-hydroxypropyl)methacrylamide copolymers on the ability to induce antibody formation in inbred strains of mice", *Biomaterials* **1984**, *5*, 143-148;
b) B. Říhová, J. Kopeček, K. Ulbrich, V. Chytrý, "Immunogenicity of *N*-(2-hydroxypropyl)methacrylamide copolymers", *Macromol. Chem.* **1985**, *9 (Suppl.)*, 13-24.
- [140] a) P. A. Vasey, R. Duncan, S. B. Kaye, J. Cassidy, "Clinical Trial of PK1 (HPMA copolymer doxorubicin)", *Eur. J. Cancer* **1995**, *31A*, 193;
b) P. A. Vasey, S. B. Kaye, R. Morrison, C. Twelves, P. Wilson, R. Duncan, A. H. Thomson, L. S. Murray, T. E. Hilditch, T. Murray, S. Burtles, D. Fraier, E. Frigerio, J. Cassidy, "Phase I Clinical and Pharmacokinetic Study of PK1 [*N*-(2-Hydroxypropyl)methacrylamide Copolymer Doxorubicin]: First Member of a New Class of Chemotherapeutic Agents – Drug-Polymer Conjugates", *Clin. Cancer Res.* **1999**, *8*, 83-94.
- [141] P. J. Julyan, L. W. Seymour, D. R. Ferry, S. Daryani, C. M. Boivin, J. Doran, M. David, D. Anderson, C. Christodoulou, A. M. Young, S. Hesslewood, D. J. Kerr, "Preliminary clinical study of the distribution of HPMA copolymers bearing doxorubicin and galactosamine", *J. Controlled Release* **1999**, *57*, 281-290.
- [142] a) R. Duncan, J. Kopeček, P. Rejmanová, J. B. Lloyd, "Targeting of *N*-(2-hydroxypropyl)methacrylamide copolymers to liver by incorporation of galactose residues", *Biochim. Biophys. Acta* **1983**, *755*, 518-521;
b) R. C. Rathí, P. Kopečková, B. Říhová, J. Kopeček, "*N*-(2-Hydroxypropyl)methacrylamide copolymers containing pendent saccharide moieties. Synthesis and bioadhesive properties", *J. Polym. Sci., Part A: Polym. Chem.* **1991**, *29*, 1895-1991.
- [143] a) B. Říhová, J. Kopeček, "Biological properties of targetable poly[*N*-(2-hydroxypropyl)methacrylamide]-antibody conjugates", *J. Controlled Release* **1985**, *2*, 289-310;
b) B. Říhová, P. Kopečková, J. Strohalm, P. Rossmann, V. Větvíčka, J. Kopeček, "Antibody directed affinity therapy applied to the immune system: *in vivo* effectiveness and limited toxicity of daunomycin conjugates to HPMA copolymers and targeting antibody", *Clin. Immunol. Immunopathol.* **1988**, *46*, 100-114;
c) V. Omelyanenko, P. Kopečková, C. Gentry, J.-G. Shiah, J. Kopeček, "HPMA copolymer-anticancer drug-OV-TL16 antibody conjugates. I. Influence of the method of synthesis on the binding affinity to OVCAR-3 ovarian carcinoma cells *in vitro*", *J. Drug Targeting* **1996**, *3*, 357-373.
- [144] Z.-R. Lu, P. Kopečková, J. Kopeček, "Polymerizable Fab' antibody fragments for targeting of anticancer drugs", *Nat. Biotechnol.* **1999**, *3*, 357-373.
- [145] a) K. Ulbrich, V. Šubr, J. Strohalm, D. Plocavá, M. Jelínková, B. Říhová, "Polymeric drugs based on conjugates of synthetic and natural macromolecules: I. Synthesis and physico-chemical characterisation", *J. Controlled Release* **2000**, *64*, 63-79;
b) A. Godwin, M. Hartenstein, A. H. E. Müller, S. Brocchini, "Narrow Molecular Weight Distribution Precursors for Polymer-Drug Conjugates", *Angew. Chem.* **2001**, *113*, 614-617; *Angew. Chem., Int. Ed.* **2001**, *40*, 594-597.
- [146] L. J. Twyman, A. E. Beezer, R. Esfand, M. J. Hardy, J. C. Mitchell, "The Synthesis of Water Soluble Dendrimers, and their Application as Possible Drug Delivery Systems", *Tetrahedron Lett.* **1999**, *40*, 1743-1746.
- [147] C. Kojima, K. Kono, K. Maruyama, T. Takagishi, "Synthesis of Polyamidoamine Dendrimers Having Poly(ethyleneglycol) Grafts and Their Ability To Encapsulate Anticancer Drugs", *Bioconjugate Chem.* **2000**, *11*, 910-917.
- [148] C. Kojima, Y. Haba, T. Fukui, K. Kono, T. Takagishi, "Design of Biocompatible Dendrimers with Environment Sensitivity", *Macromolecules* **2003**, *36*, 2183-2186.
- [149] M. Liu, K. Kono, J. M. J. Fréchet, "Water-soluble dendritic unimolecular micelles: Their potential as drug delivery agents", *J. Controlled Release* **2000**, *65*, 121-131.
- [150] L. Vincent, J. Varet, J.-Y. Pille, H. Bompais, P. Opolon, A. Maksimenko, C. Malvy, M. Mirshahi, H. Lu, J.-P. Vannier, C. Soria, H. Li, "Efficacy of dendrimer-mediated angiostatin and TIMP-2 gene delivery and inhibition of tumor growth and angiogenesis: *in vitro* and *in vivo* studies", *Int. J. Cancer* **2003**, *105*, 419-429.
- [151] a) D. Zanini, R. Roy, "Synthesis of New α -Thiosialodendrimers and Their Binding Properties to the Sialic Acid Specific Lectin from *Limax flavus*", *J. Am. Chem. Soc.* **1997**, *119*, 2088-2095;
b) P. R. Ashton, S. E. Boyd, C. L. Brown, S. A. Nepogodiev, E. W. Meijer, H. W. I. Peerlings, J. F. Stoddart, "Synthetic carbohydrate dendrimers. 3. Synthesis of glycodendrimers by modification of poly(propylene imine) dendrimers", *Chem. Eur. J.* **1997**, *3*, 974-984;
c) D. J. Reuter, A. Myc, M. M. Hayes, Z. Gan, R. Roy, D. Qin, R. Yin, L. T. Piehler, R. Esfand, D. A. Tomalia, J. R. Baker Jr., "Inhibition of Viral Adhesion and Infection by Sialic-Acid-Conjugated Dendritic Polymers", *Bioconjugate Chem.* **1999**, *10*, 271-278.

- [152] J. C. Roberts, Y. E. Adams, D. A. Tomalia, J. A. Mercer-Smith, D. K. Lavalley, "Using starburst dendrimers as linker molecules to radiolabel antibodies", *Bioconjugate Chem.* **1990**, *1*, 305-308.
- [153] C. Sun, P. Wirsching, K. D. Janda, "Synthesis of Dendritic Linkers Containing Chlorambucil Residues for the Preparation of Antibody-Multidrug Immunoconjugates", *Bioorg. Med. Chem. Lett.* **2002**, *12*, 2213-2215.
- [154] A. Quintana, E. Raczka, L. Piehler, I. Lee, A. Myc, I. Majoros, A. K. Patri, T. Thomas, J. Mulé, J. R. Baker Jr., "Design and Function of a Dendrimer-Based Therapeutic Nanodevice Targeted to Tumor Cells Through the Folate Receptor", *Pharm. Res.* **2002**, *19*, 1310-1316.
- [155] H. R. Ihre, O. L. Padilla De Jesús, F. C. Szoka Jr., J. M. J. Fréchet, "Polyester Dendritic Systems for Drug Delivery Applications: Design, Synthesis, and Characterization", *Bioconjugate Chem.* **2002**, *13*, 443-452.
- [156] O. L. Padilla De Jesus, H. R. Ihre, L. Gagne, J. M. J. Fréchet, F. C. Szoka Jr., "Polyester Dendritic Systems for Drug Delivery Applications: In Vitro and In Vivo Evaluation", *Bioconjugate Chem.* **2002**, *13*, 453-461.
- [157] E. R. Gillies, J. M. J. Fréchet, "Designing Macromolecules for Therapeutic Applications: Polyester Dendrimer-Poly(ethylene oxide) "Bow-Tie" Hybrids with Tunable Molecular Weight and Architecture", *J. Am. Chem. Soc.* **2002**, *124*, 14137-14146.
- [158] H. Yoo, P. Sazani, R. L. Juliano, "PAMAM Dendrimers as Delivery Agents for Antisense Oligonucleotides", *Pharm. Res.* **1999**, *12*, 1799-1804.
- [159] J. C. Roberts, M. K. Bhalgat, R. T. Zera, "Preliminary biological evaluation of polyamidoamine (PAMAM) Starburst™ dendrimers", *J. Biomed. Mater. Res.* **1996**, *30*, 53-65.
- [160] N. Malik, R. Wiwattanapatapee, R. Klopsch, K. Lorenz, H. Frey, J. W. Weener, E. W. Meijer, W. Paulus, R. Duncan, "Dendrimers: Relationship between structure and biocompatibility in vitro, and preliminary studies on the biodistribution of ¹²⁵I-labelled polyamidoamine dendrimers in vivo", *J. Controlled Release* **2000**, *65*, 133-148.
- [161] M. Witvrouw, V. Fikkert, W. Pluymers, B. Matthews, K. Mardel, D. Schols, J. Raff, Z. Debyser, E. de Clercq, G. Holan, C. Pannecouque, "Polyanionic (i.e., Polysulfonate) Dendrimers Can Inhibit the Replication of Human Immunodeficiency Virus by Interfering with Both Virus adsorption and Later Steps (Reverse Transcriptase/Integrase) in the Virus Replicative Cycle", *Mol. Pharmacol.* **2000**, *58*, 1100-1108.
- [162] R. Jevprasesphant, J. Penny, R. Jalal, D. Attwood, N. B. McKeown, A. D'Emanuele, "The influence of surface modification on the cytotoxicity of PAMAM dendrimers", *Int. J. Pharm.* **2003**, *252*, 263-266.
- [163] H. Yoo, R. L. Juliano, "Enhanced delivery of antisense oligonucleotides with fluorophore-conjugated PAMAM dendrimers", *Nucleic Acids Res.* **2000**, *28*, 4225-4231.
- [164] A. Bielinska, J. D. Eichman, I. Lee, J. R. Baker Jr., L. Balogh, "Imaging {Au⁰-PAMAM} gold-dendrimer nanocomposites in cells", *J. Nanoparticle Res.* **2002**, *4*, 395-403.
- [165] L. Crespo, G. Sanclimens, B. Montaner, R. Pérez-Tomás, M. Royo, M. Pons, F. Albericio, E. Giralt, "Peptide Dendrimers Based on Polyproline Helices", *J. Am. Chem. Soc.* **2002**, *124*, 8876-8883.
- [166] a) R. Klopsch, S. Koch, A. D. Schlüter, "Amino-functionalized, second-generation dendritic building blocks", *Eur. J. Org. Chem.* **1998**, *7*, 1275-1283;
b) S. Vetter, S. Koch, A. D. Schlüter, "Synthesis and polymerization of functionalized dendritic macromonomers", *J. Polym. Sci., Polym. Chem.* **2001**, *39*, 1940-1954;
c) A. Zhang, S. Vetter, A. D. Schlüter, "On the improved accessibility of dendronized macromonomers with peripheral protected amine groups", *Macromol. Chem. Phys.* **2001**, *202*, 3301-3315.
- [167] a) N. Miyaura, T. Ishiyama, H. Sasik, M. Satoh, A. Suzuki, "Palladium-Catalyzed Inter- and Intramolecular Cross-Coupling Reactions of *B*-Alkyl-9-borabicyclo[3.3.1]nonane Derivatives with 1-Halo-1-alkenes or Haloarenes. Synthesis of Functionalized Alkenes, Arenes, and Cycloalkanes via a Hydroboration-Coupling Sequence", *J. Am. Chem. Soc.* **1989**, *111*, 314-321;
b) N. Miyaura, A. Suzuki, "Palladium-Catalyzed Cross-Coupling Reactions of Organoboron Compounds", *Chem. Rev.* **1995**, *95*, 2457-2483;
c) A. Suzuki, "Recent advances in the cross-coupling reactions of organoboron derivatives with organic electrophiles", *J. Organomet. Chem.* **1999**, *576*, 147-168;
d) S. R. Chemler, D. Trauner, S. J. Danishefsky, "Die *B*-Alkyl-Suzuki-Miyaura-Kreuzkupplung: Entwicklung, Untersuchungen zum Mechanismus und Anwendungen in der Naturstoffsynthese", *Angew. Chem.* **2001**, *113*, 4676-4701; *Angew. Chem., Int. Ed.* **2001**, *40*, 4544-4568.
- [168] a) G. R. Newkome, X. Lin, C. D. Weis, "Polytryptophane terminated dendritic macromolecules", *Tetrahedron Asymm.* **1991**, *2*, 957-960;
b) K. E. Uhrich, J. M. J. Fréchet, "Synthesis of dendritic polyamides via a convergent growth approach", *J. Chem. Soc. Perkin Trans. 1* **1994**, *116*, 6975-1630;
c) L. J. Twyman, A. E. Beezer, J. C. Mitchell, "The synthesis of chiral dendritic molecules based on the repeat unit *L*-glutamic acid", *Tetrahedron Lett.* **1994**, *35*, 4423-4424;

- d) R. Roy, W. K. C. Park, Q. Wu, S.-N. Wang, "Synthesis of hyper-branched dendritic lactosides", *Tetrahedron Lett.* **1995**, *36*, 4377-4380;
- e) S. Mattei, P. Seiler, F. Diederich, V. Gramlich, "Dendrophanes: water-soluble dendritic receptors", *Helv. Chim. Acta* **1995**, *78*, 1904-1912.
- [169] a) S. J. E. Mulders, A. J. Brouwer, P. G. J. van der Meer, R. M. J. Liskamp, "Synthesis of a Novel Amino Acid Based Dendrimer", *Tetrahedron Lett.* **1997**, *38*, 631-634;
- b) S. J. E. Mulders, A. J. Brouwer, R. M. J. Liskamp, "Molecular Diversity of Novel Amino Acid Based Dendrimers", *Tetrahedron Lett.* **1997**, *38*, 3085-3088;
- c) R. A. Gossage, J. T. B. H. Jastrzebski, J. van Ameijde, S. J. E. Mulders, A. J. Brouwer, R. M. J. Liskamp, G. van Koten, "Synthesis and Catalytic Application of Amino Acid Based Dendritic Macromolecules", *Tetrahedron Lett.* **1999**, *40*, 1413-1416;
- d) S. Bart, A. Halkes, I. Vrasidas, G. R. Rooijer, A. J. J. van den Berg, R. M. J. Liskamp, R. J. Pieters, "Synthesis and Biological Activity of Polygalloyl-dendrimers as Stable Tannic Acid Mimetics", *Bioorg. Med. Chem. Lett.* **2002**, *12*, 1567-1570.
- [170] a) B. I. Voit, D. Wolf, "Perfectly Branched Polyamide Dendrons Based on 5-(2-Aminoethoxy)-Isophthalic Acid", *Tetrahedron* **1997**, *53*, 15535-15551;
- b) D. Appelhans, H. Komber, D. Voigt, L. Häussler, B. I. Voit, "Synthesis and Characterization of Poly(ether amide) Dendrimers Containing Different Core Molecules", *Macromolecules* **2000**, *33*, 9494-9503.
- [171] Für eine Übersicht über das Gesamtgebiet, siehe:
- a) M. Bodansky, *Principles of Peptide Synthesis*, Springer-Verlag, Berlin – Heidelberg, **1984**;
- b) G. Jung, A. G. Beck-Sickinger, "Methoden der multiplen Peptidsynthese und ihre Anwendungen", *Angew. Chem.* **1992**, *104*, 375-391; *Angew. Chem., Int. Ed.* **1992**, *31*, 367-383.
- [172] K. Matos, J. A. Sonderquist, "Alkylboranes in the Suzuki-Miyaura Coupling: Stereochemical and Mechanistic Studies", *J. Org. Chem.* **1998**, *63*, 461-470.
- [173] H. C. Brown, *Organic Synthesis via Boranes*, John Wiley & Sons, New York, U.S.A., **1975**.
- [174] B. H. Ridgway, K. A. Woerpel, "Transmetalation of Alkylboranes to Palladium in the Suzuki Coupling Reaction Proceeds with Retention of Stereochemistry", *J. Org. Chem.* **1998**, *63*, 461-470.
- [175] a) L. A. Carpino, "Oxidative Reactions of Hydrazines. II. Isophthalimides. New Protective Groups on Nitrogen", *J. Am. Chem. Soc.* **1957**, *79*, 98-101;
- b) F. C. McKay, N. F. Albertson, "New Amine-masking Groups for Peptide Synthesis", *J. Am. Chem. Soc.* **1957**, *79*, 4686-4690;
- c) G. W. Anderson, A. C. McGregor, "*t*-Butyloxycarbonylamino Acids and Their Use in Peptide Synthesis", *J. Am. Chem. Soc.* **1957**, *79*, 6180-6183.
- [176] Y. S. Klausner, M. Bodansky, "Coupling Reagents in Peptide Synthesis", *Synthesis* **1972**, 453-463.
- [177] a) J. C. Sheehan, G. P. Hess, "A New Method of Forming Peptide Bonds", *J. Am. Chem. Soc.* **1955**, *77*, 1067-1068;
- b) F. Kurzer, K. Douraghi-Zadeh, "Advances in the chemistry of carbodiimides", *Chem. Rev.* **1967**, *67*, 107-152.
- [178] a) D. F. DeTar, R. Silverstein, "Reactions of Carbodiimides. I. The Mechanism of the Reactions of Acetic Acid with Dicyclohexylcarbodiimide", *J. Am. Chem. Soc.* **1966**, *88*, 1013-1019;
- b) D. F. DeTar, R. Silverstein, "Reactions of Carbodiimides. II. The Reactions of Dicyclohexylcarbodiimide with Carboxylic Acids in the Presence of Amines", *J. Am. Chem. Soc.* **1966**, *88*, 1020-1023.
- [179] J. C. Sheehan, S. L. Ledis, "Total Synthesis of a Monocyclic Peptide Lactone Antibiotic, Etamycin", *J. Am. Chem. Soc.* **1973**, *95*, 875-879.
- [180] W. König, R. Geiger, "Eine neue Methode zur Synthese von Peptiden: Aktivierung der Carboxylgruppe mit Dicyclohexylcarbodiimid unter Zusatz von 1-Hydroxy-benzotriazolen", *Chem. Ber.* **1970**, *103*, 788-798.
- [181] a) L. A. Carpino, "1-Hydroxy-7-azabenzotriazole. An Efficient Peptide Coupling Additive", *J. Am. Chem. Soc.* **1993**, *115*, 4397-4398;
- b) L. A. Carpino, A. El-Faham, C. A. Minor, F. Albericio, "Advantageous applications of azabenzotriazole (triazolopyridine)-based coupling reagents to solid-phase peptide synthesis", *J. Chem. Soc., Chem. Commun.* **1994**, 201-203;
- c) L. A. Carpino, A. El-Faham, F. Albericio, "Racemization studies during solid-phase peptide synthesis using azabenzotriazole-based coupling reagents", *Tetrahedron Lett.* **1994**, *35*, 2279-2282.
- [182] R. Knorr, A. Trzeciak, W. Bannwarth, D. Gillissen, "New coupling reagents in peptide chemistry", *Tetrahedron Lett.* **1989**, *30*, 1927-1930.
- [183] L. A. Carpino, H. Imazumi, A. El-Faham, F. J. Ferrer, C. Zhang, Y. Lee, B. M. Foxman, P. Henklein, C. Hanay, C. Mügge, H. Wenschuh, J. Klose, M. Beyermann, M. Bienert, "Kupplungsreagentien vom

- Uronium-/Guanidinium-Typ: Synthese und Charakterisierung der authentischen Uroniumsalze”, *Angew. Chem.* **2002**, *114*, 457-461; *Angew. Chem., Int. Ed.* **2002**, *41*, 441-445.
- [184] M. Beinhoff, *Dissertation: „Grundlegende Arbeiten zu sphärischen Phenylen-Alkylen-Dendrimeren mit generationsspezifisch eingebauten fluoreszierenden Solvatationssonden auf Pyrenbasis“*, Freie Universität Berlin, **2001**.
- [185] a) E. Atherton, C. L. Logan, R. C. Sheppard, “Peptide synthesis. Part 2. Procedures for solid-phase synthesis using N^α -fluorenylmethoxycarbonyl amino acids on polyamide supports. Synthesis of substance P and of acyl carrier protein 65-74 decapeptide”, *J. Chem. Soc., Perkin Trans. 1* **1981**, 538-546;
b) E. Atherton, R. C. Sheppard, J. D. Wade, “Side-Chain Protected N^α -Fluorenylmethoxycarbonylamino acids for Solid Phase Peptide Synthesis. N^α -Fluorenylmethoxycarbonyl-, N^G -4-methoxy-2,3,6-trimethylbenzenesulphonyl-L-arginine”, *J. Chem. Soc., Chem. Commun.* **1983**, 1060-1062;
c) E. Atherton, R. C. Sheppard, *Solid Phase Peptide Synthesis: a practical approach*, IRL Press at Oxford University Press, Oxford, **1989**;
d) G. B. Fields, R. L. Noble, “Solid phase peptide synthesis utilizing 9-fluorenylmethoxycarbonyl amino acids”, *Int. J. Pept. Protein Res.* **1990**, *35*, 161-214.
- [186] a) L.A. Carpino, G. Y. Han, “9-Fluorenylmethoxycarbonyl function, a new base-sensitive amino-protecting group”, *J. Am. Chem. Soc.* **1970**, *92*, 5748-49;
b) L. A. Carpino, G. Y. Han, “The 9-Fluorenylmethoxycarbonyl Amino-Protecting Group”, *J. Org. Chem.* **1972**, *37*, 3404-3409;
c) L. A. Carpino, “The 9-Fluorenylmethoxycarbonyl Family of Base –Sensitive Amino-Protecting Groups”, *Acc. Chem. Res.* **1987**, *20*, 401-407.
- [187] F. M. F. Chen, N. L. Benoiton, “Diisopropylethylamine eliminates dipeptide formation during the acylation of amino acids using benzoyl chloride and some alkyl chloroformates”, *Can. J. Chem.* **1987**, *65*, 1224-1227.
- [188] W. L. Jorgensen, J. Chandrasekhar, J. D. Madura, R. W. Impey, M. L. Klein, “Comparison of simple potential functions for simulating liquid water”, *J. Chem. Phys.* **1983**, *79*, 926-935.
- [189] a) M. C. Cox, K. J. Barnham, T. A. Frenkiel, J. D. Hoeschele, A. B. Mason, Q.-Y. He, R. C. Woodworth, P. J. Sadler, “Identification of platination sites on human serum transferrin using ^{13}C and ^{15}N NMR spectroscopy”, *J. Biol. Inorg. Chem.* **1999**, *4*, 621-631;
b) Z. Nagy, I. Fábrián, I. Sóvágó, “Thermodynamic, kinetic and structural studies on the ternary palladium (II) complexes of thioether ligands”, *J. Inorg. Biochem.* **2000**, *79*, 129-138.
- [190] a) M. El-Khateebap, T. G. Appleton, L. R. Gahan, B. G. Charles, S. J. Berners-Price, A.-M. Bolton, “Reactions of cisplatin hydrolytes with methionine, cysteine, and plasma ultrafiltrate studied by a combination of HPLC and NMR techniques”, *J. Inorg. Biochem.* **1999**, *77*, 13-21;
b) O. Heudi, S. Mercier-Jobard, A. Cailleux, P. Allain, “Mechanisms of Reaction of L-Methionine with Carboplatin and Oxaliplatin in Different Media: a Comparison with Cisplatin”, *Biopharm. Drug Dispos.* **1999**, *20*, 107-116;
c) S. Verstraete, O. Heudi, A. Cailleux, P. Allain, “Comparison of the reactivity of oxaliplatin, $\text{Pt}(\text{diaminocyclohexane})\text{Cl}_2$ and $\text{Pt}(\text{diaminocyclohexane})(\text{OH}_2)_2^{2+}$ with guanosine and L-Methionine”, *J. Inorg. Biochem.* **2001**, *84*, 129-135;
d) D. B. Strickmann, A. Küng, B. K. Keppler, “Application of capillary electrophoresis-mass spectrometry for the investigation of the binding behavior of oxaliplatin to 5'-GMP in the presence of the sulfur-containing amino acid L-methionine”, *Electrophoresis* **2002**, *23*, 74-80;
c) B. Bóka, Z. Nagy, K. Várnagy, I. Sóvágó, “Solution equilibria and structural characterization of palladium(II) and mixed metal complexes of peptides containing methionyl residues”, *J. Inorg. Biochem.* **2001**, *83*, 77-89;
d) A. Küng, D. B. Strickmann, M. Galanski, B. K. Keppler, “Comparison of the binding behavior of oxaliplatin, cisplatin and analogues to 5'-GMP in the presence of sulfur-containing molecules by means of capillary electrophoresis and electrospray mass spectrometry”, *J. Inorg. Biochem.* **2001**, *86*, 691-698.
- [191] C. Sergheraert, P. Mäes, A. Tartar, “Specific covalent fixation of chelating agents on peptides”, *J. Chem. Soc., Perkin Trans. 1* **1986**, 1061-1064.
- [192] Für einige neuere Veröffentlichungen zum Dansyl-Fluorophor, siehe:
a) R. Metivier, I. Leray, B. Valeur, “A highly sensitive and selective fluorescent molecular sensor for Pb(II) based on a calix[4]arene bearing four dansyl groups”, *Chem. Commun.* **2003**, *8*, 996-997;
b) K. Horie, S. Yamada, S. Machida, T. Shinjiro, Y. Isono, H. Kawaguchi, “Dansyl fluorescence and local structure of dansyl-labeled core-shell and core-hair type microspheres in solution”, *Macromol. Chem. Phys.* **2003**, *204*, 131-138;
c) U. Hahn, M. Gorke, F. Vögtle, V. Vicinelli, P. Ceroni, M. Meastri, V. Balzani, “Light-harvesting dendrimers: efficient intra- and intermolecular energy-transfer processes in a species containing 65 chromo-

- phoric groups of four different types”, *Angew. Chem.* **2002**, *114*, 3747-3750; *Angew. Chem., Int. Ed.* **2002**, *41*, 3595-3598;
- d) N. Ramachandran, P. Root, X.-N. Jiang, P. J. Hogg, B. Mutus, “Mechanism of transfer of NO from extracellular *S*-nitrosothiols into the cytosol by cell-surface protein disulfide isomerase”, *PNAS* **2001**, *98*, 9539-9544;
- e) L. Prodi, M. Montalti, N. Zaccheroni, F. Dallavalle, G. Folesani, M. Lanfranchi, R. Corradini, S. Pagliari, R. Marchelli, “Dansylated polyamines as fluorescent sensors for metal ions: photophysical properties and stability of copper(II) complexes in solution”, *Helv. Chim. Acta* **2001**, *84*, 690-706;
- f) H. F. M. Nelissen, F. Venema, R. M. Uittenbogaard, M. C. Feiters, R. J. M. Nolte, “Synthesis of novel dansyl appended cyclodextrins. Self-inclusion and sensor properties”, *J. Chem. Soc., Perkin Trans. 2* **1997**, 2045-2054.
- [193] Für einige Veröffentlichungen zum FITC-Fluorophor, siehe:
- a) C. C. Smeltzer, M. J. Cannon, P. R. Pinson, J. D. Munger Jr., F. G. West, C. B. Grissom, “Synthesis and Characterization of Fluorescent Cobalamin (CobalaFluor) Derivatives for Imaging”, *Org. Lett.* **2001**, *3*, 799-801;
- b) Y. Aubert, S. Bourgerie, L. Meunier, R. Mayer, A.-C. Roche, M. Monsigny, N. T. Thuong, U. Asseline, “Optimized synthesis of phosphorothiolate oligodesoxyribonucleotides substituted with a 5'-protected thiol function and a 3'-amino group”, *Nucleic Acids Res.* **2000**, *28*, 818-825;
- c) Y.-F. Cheng, N. J. Dovichi, “Subattomole Amino Acid Analysis by Capillary Zone Electrophoresis and Laser-Induced Fluorescence”, *Science* **1988**, *242*, 562-564;
- d) H. Rinderknecht, “Ultra-Rapid Fluorescent Labelling of Proteins”, *Nature* **1962**, *193*, 167-168.
- [194] Für einige Veröffentlichungen zum Fluorescamin-Fluorophor, siehe:
- a) J. V. Castell, M. Cervera, R. Marco, “A convenient Micromethod for the Assay of Primary Amines and Proteins with Fluorescamine. A Reexamination of the Conditions of Reaction”, *Anal. Biochem.* **1979**, *99*, 379-391;
- b) M. Weigele, S. L. DeBernardo, J. P. Teng, W. Leimgruber, “A Novel Reagent for the Fluorimetric Assay of Primary Amines”, *J. Am. Chem. Soc.* **1972**, 5927-5928;
- c) S. Udenfriend, S. Stein, P. Bohlen, W. Dairman, W. Leimgruber, M. Weigele, “Fluorescamine: A Reagent for Assay of Amino Acids, Peptides, Proteins, and Primary Amines in the Picomole Range”, *Science* **1972**, *178*, 871-872.
- [195] Für einige Veröffentlichungen zum ‘Green Fluorescent Protein’ (GFP), siehe:
- a) H. Ogawa, S. Inouye, F. I. Tsuji, K. Yasuda, K. Umehara, “Localization, trafficking, and temperature-dependence of the *Aequorea* green fluorescent protein in cultured vertebrate cells”, *Proc. Natl. Acad. Sci. U.S.A.* **1995**, *92*, 11899-11903;
- b) M. Chalfie, Y. Tu, G. Euskirchen, W. W. Ward, D. C. Prasher, “Green Fluorescent Protein as a Marker for Gene Expression”, *Science* **1994**, *263*, 802-804.
- [196] a) F. Vögtle, S. Gestermann, C. Kauffmann, P. Ceroni, V. Vicinelli, L. De Cola, V. Balzani, “Poly(propylene amine) dendrimers with peripheral dansyl units: protonation, absorption spectra, photophysical properties, intradendrimer quenching, and sensitization processes”, *J. Am. Chem. Soc.* **1999**, *121*, 12161-12166;
- b) V. Balzani, P. Ceroni, S. Gestermann, C. Kauffmann, M. Gorka, F. Vögtle, “Dendrimers as fluorescent sensors with signal amplification”, *Chem. Commun.* **2000**, 853-854;
- c) V. Balzani, P. Ceroni, S. Gestermann, M. Gorka, C. Kauffmann, F. Vögtle, “Effect of protons and metal ions on the fluorescence properties of a polylysine dendrimer containing twenty four dansyl units”, *J. Chem. Soc., Dalton Trans.* **2000**, 3765-3771.
- [197] R. Bartzatt, “Fluorescent labeling of drugs and simple organic compounds containing amine functional groups, utilizing dansyl chloride in Na₂CO₃ buffer”, *J. Pharmacol. Toxicol. Methods* **2001**, *45*, 247-253.
- [198] Literaturstelle [194a]: *Supporting Information*, S1-8.
- [199] C. M. Cardona, J. Alvarez, A. E. Kaifer, T. D. McCarley, S. Pandey, G. A. Baker, N. J. Bonzagni, F. V. Bright, “Dendrimers Functionalized with a single Fluorescent Dansyl Group Attached ‘Off Center’: Synthesis and Photophysical Studies”, *J. Am. Chem. Soc.* **2000**, *122*, 6139-6144.
- [200] Y.-H. Li, L.-M. Chan, L. Tyer, R. T. Moody, C. M. Himel, D. M. Hercules, “Study of Solvent Effects on the Fluorescence of 1-(Dimethylamino)-5-naphthalenesulfonic Acid and Related Compounds”, *J. Am. Chem. Soc.* **1975**, 3118-3126.
- [201] S. Koch, *Dissertation*: „Aminofunktionalisierte dendronisierte Polymere: Synthese, Charakterisierung und Modifizierung“, Freie Universität Berlin, **2000**.
- [202] T. W. Greene, P. G. M. Wuts, *Protective Groups in Organic Synthesis*, 3rd Edition, John Wiley & Sons, New York, U.S.A., **1998**.

- [203] H. F. M. Nelissen, F. Verena, R. M. Uittenbogaard, M. C. Feiters, R. J. M. Nolte, "Synthesis of novel dansyl appended cyclodextrins. Self-inclusion and sensor properties", *J. Chem. Soc., Perkin Trans. 2* **1997**, *10*, 2045-2054.
- [204] A. L. Lehninger, D. L. Nelson, M. M. Cox, *Prinzipien der Biochemie*, 2. Aufl., Spektrum Akademischer Verlag, Heidelberg, **1994**.
- [205] a) A. R. Poole, K. J. Tiltman, A. D. Recklies, T. A. M. Stoker, "Differences in secretion of the proteinase cathepsin B at the edges of human breast carcinomas and fibroadenomas", *Nature* **1978**, *273*, 545-547.
b) A. D. Recklies, K.J. Tiltman, T. A. M. Stoker, "Secretion of proteinases from malignant and nonmalignant human breast tissue", *Cancer Res.* **1980**, *40*, 550-556.
- [206] B. F. Sloane, K. V. Honor, J. G. Sadler, W. A. Turner, J. J. Kimpson, J. D. Taylor, "Cathepsin B activity in B16 melanoma cells: a possible marker for metastatic potential", *Cancer Res.* **1982**, *42*, 980-986.
- [207] D. Musil, D. Zucic, D. Turk, R. A. Engh, I. Mayr, R. Huber, T. Popovic, V. Turk, T. Towatari, N. Katunuma, W. Bode, "The refined 2.15 Å X-ray crystal structure of human liver cathepsin B: the structural basis for its specificity", *EMBO J.* **1991**, *10*, 2321-2330.
- [208] A. J. Barrett, H. Kirschke, "Cathepsin B, Cathepsin H, and Cathepsin L", in: S. P. Colowick, N. O. Kaplan, *Methods in Enzymology*, Vol. 80: *Proteolytic Enzymes*, Academic Press, New York, London, **1981**.
- [209] a) K. Barlos, D. Gatos, J. Kallitsis, G. Papaphotiu, P. Sotiriu, Y. Wenqing, W. Schäfer, "Darstellung geschützter Peptid-Fragmente unter Einsatz substituierter Triphenylmethyl-Harze", *Tetrahedron Lett.* **1989**, *30*, 3943-3946;
b) K. Barlos, D. Gatos, S. Kaposos, G. Papaphotiu, W. Schäfer, Y. Wenqi, "Veresterung von partiell geschützten Peptid-Fragmenten mit Harzen. Einsatz von 2-Chlorotriethylchlorid zur Synthese von Leu¹⁵-Gastrin I", *Tetrahedron Lett.* **1989**, *30*, 3947-3950;
c) K. Barlos, O. Chatzi, D. Gatos, G. Stavropoulos, "2-Chlorotriethyl chloride resin. Studies on anchoring of Fmoc-aminio acids and peptide cleavage", *Int. J. Pept. Protein Res.* **1991**, *37*, 513-520.
- [210] a) L. A. Carpino, H. Shroff, S. A. Triolo, E.-S. M. E. Mansour, H. Wenschuh, F. Albericio, "The 2,2,4,6,7-Pentamethyldihydrobenzofuran-5-sulfonyl Group (Pbf) as Arginine Side Chain Protectant", *Tetrahedron Lett.* **1993**, *34*, 7829-7832;
b) K. Kitagawa, C. Aida, H. Fujiwara, T. Yagami, S. Futaki, M. Kogire, J. Ida, K. Inoue, "Facile Solid-Phase synthesis of Sulfated Tyrosine-Containing Peptides: Total Synthesis of Human Big Gastrin-II and Cholecystokinin (CKK)-39", *J. Org. Chem.* **2001**, *66*, 1-10;
c) J. Li, G. Zhang, Z. Zhang, E. Fan, "TFA-Sensitive Arylsulfonylthiourea-Assisted Synthesis of N,N'-Substituted Guanidines", *J. Org. Chem.* **2003**, *68*, 1611-1614.
- [211] D. Fischer, Y. Li, B. Ahlemeyer, J. Krieglstein, T. Kissel, "In vitro cytotoxicity testing of polycations: influence of polymer structure on cell viability and hemolysis", *Biomaterials* **2003**, *24*, 1121-1131.
- [212] B. Carreno-Gomez, R. Duncan, "Evaluation of the biological properties of soluble chitosan and chitosan microspheres", *Int. J. Pharm.* **1997**, *148*, 231-240.
- [213] S. Choksakulnimitr, S. Masuda, H. Tokuda, Y. Takakura, M. Hashida, "In vitro cytotoxicity of macromolecules in different cell culture systems", *J. Controlled Release* **1995**, *34*, 233-241.
- [214] H. J. P. Ryser, "A membrane effect of basic polymers dependent on molecular size", *Nature* **1967**, *215*, 934-936.
- [215] M. Witvrouw, V. Fikkert, W. Pluymers, B. Matthews, K. Mardel, D. Schols, J. Raff, Z. Debyser, E. de Clercq, G. Holan, C. Pannecouque, "Polyanionic (i.e. Polysulfonate) Dendrimers Can Inhibit the Replication of Human Immunodeficiency Virus by Interfering with Both Virus Adsorption and Later Steps (Reverse Transcriptase/Integrase) in the Virus Replicative Cycle", *Mol. Pharmacol.* **2000**, *58*, 1100-1108.
- [216] R. Foisner, L. Gerace, "Integral membrane proteins of the nuclear envelope interact with lamins and chromosomes, and binding is modulated by mitotic phosphorylation", *Cell* **1993**, *73*, 1267- 1279.
- [217] D. I. Axel, I. Spyridopoulos, R. Riessen, H. Runge, R. Viebahn, K. R. Karsch, "Toxicity, Uptake Kinetics and Efficacy of New Transfection Reagents: Increase of Oligonucleotide Uptake", *J. Vasc. Res.* **2000**, *37*, 221-234.
- [218] T. Kapp, S. Fuchs, A. D. Schlüter, R. Gust, *in Vorbereitung*.
- [219] C. Bour-Dill, M.-P. Gramain, J.-L. Merlin, S. Marchal, F. Guillemin, "Determination of intracellular organelles implicated in daunorubicin cytoplasmic sequestration in multidrug-resistant MCF-7 cells using fluorescence microscopy image analysis", *Cytometry* **2000**, *39*, 16-25.
- [220] G. Labroille, F. Belloc, C. Bilhou-Nabera, S. Bonnefille, E. Bascans, M. R. Boisseau, P. Bernard, F. Lacombe, "Cytometric Study of Intracellular P-gp Expression and Reversal of Drug Resistance", *Cytometry* **1998**, *32*, 86-94.

- [221] C. Molenaar, J.-M. Teuben, R. J. Heetebrij, H. J. Tanke, J. Reedijk, "New insights in the cellular processing of platinum antitumor compounds, using fluorophore-labelled platinum complexes and digital fluorescence microscopy", *J. Biol. Inorg. Chem.* **2000**, *5*, 655-665.
- [222] L. Stryer, *Biochemie*, 4. Aufl., Spektrum Akademischer Verlag, Heidelberg, **1987**.
- [223] A. Dullin, R. Gust, *unveröffentlichte Ergebnisse*.
- [224] T. Kapp, R. Gust, *unveröffentlichte Ergebnisse*.
- [225] S. Fuchs, A. D. Schlüter, *unveröffentlichte Ergebnisse*.
- [226] Die Lenkung von Proteinen zum Zellkern wird beschrieben in:
a) D. Calderon, B. L. Roberts, W. D. Richardson, A. E. Smith, "A Short Amino Acid Sequence Able to Specify Nuclear Location", *Cell* **1984**, *39*, 499-509;
b) C. Dingwall, "The Accumulation of Proteins in the Nucleus", *Trends Biochem. Sci.* **1985**, *10*, 64-66;
c) W. D. Richardson, B. L. Roberts, A. E. Smith, "Nuclear Location Signals in Polyoma Virus Large-T.", *Cell* **1986**, *77-85*.
- [227] S. Müller, T. Kapp, R. Gust, A. D. Schlüter, *unveröffentlichte Ergebnisse*.
- [228] a) L. F. Tietze, T. Eicher, *Reaktionen und Synthesen im organisch-chemischen Praktikum und Forschungslaboratorium*, Thieme-Verlag, Stuttgart, **1991**;
b) Organikum, *Organisch-chemisches Grundpraktikum*, 18. Aufl., Deutscher Verlag der Wissenschaften, Berlin, **1990**.
- [229] D. R. Coulson, "Tetrakis(triphenylphosphine)palladium(0)", *Inorg. Synth.* **1971**, *13*, 121-124.
- [230] R. Bälsmann, „Über die Sulfonsäure des symmetrischen Tribrombenzols und ihre Abkömmlinge“, *Justus Liebigs Ann. Chem.* **1878**, *191*, 206-253.
- [231] N. Bischofberger, H. Waldmann, T. Saito, E. S. Simon, W. Lees, M. D. Bednarski, G. M. Whitesides, "Synthesis of Analogues of 1,3-Dihydroxyacetone Phosphate and Glyceraldehyde 3-Phosphate for Use in Studies of Fructose-1,6-diphosphate Aldolase", *J. Org. Chem.* **1988**, *53*, 3457-3465.
- [232] O. Henze, *Dissertation: „Formtreue Macrozyklen mit 2,2'-Bipyridinen: Synthese, Selbstorganisation und Komplexierung“*, Freie Universität Berlin, **2000**.
- [233] a) E. Díez-Barra, J. C. Garcia-Martinez, S. Merino, R. del Rey, J. Rodríguez-López, P. Sánchez-Verdú, J. Tejada, "Synthesis, Characterization, and Optical response of Dipolar and Non-Dipolar Poly(phenylene-vinylene) Dendrimers", *J. Org. Chem.* **2001**, *66*, 5664-5670;
b) A. A. Maryott, M. E. Hobbs, P. M. Gross, "The Electric Moments of Morpholine and Some Halogenated Toluenes", *J. Am. Chem. Soc.* **1940**, *62*, 2320-2324.
- [234] R. Volkmer-Engert, B. Hoffmann, J. Schneider-Mergener, "Stable Attachment of the HMB-Linker to Continuous Cellulose Membranes for Parallel Solid Phase Spot Synthesis", *Tetrahedron Lett.* **1997**, *38*, 1029-1032.
- [235] K. Fries, "Ueber die Einwirkung von Brom auf die halogenwasserstoffsäuren Salze der aromatischen Amine", *Chem. Ber.* **1904**, *37*, 2339-2346.
- [236] a) J. H. Chan, J. S. Hong, R. N. Hunter III, G. F. Orr, J. R. Cowan, D. B. Sherman, S. M. Sparks, B. E. Reitter, C. W. Andrews III, R. J. Hazen, M. St Clair, L. R. Boone, R. G. Ferris, K. L. Creech, G. B. Roberts, S. A. Short, K. Weaver, R. J. Ott, J. Ren, A. Hopkins, D. I. Stuart, D. K. Stammers, "2-Amino-6-arylsulfonylbenzonitriles as Non-nucleoside Reverse Transcriptase Inhibitors of HIV-1", *J. Med. Chem.* **1866**, *44*, 1866-1882;
b) R. H. C. Neville, A. Winther, "Ueber die Constitution der Produkte der Einwirkung von Brom und Salpetersäure auf aromatische Amidkörper und die sechs isomeren Dibromtoluole", *Chem. Ber.* **1880**, *13*, 962-973.
- [237] W. Wroblevsky, "Über einige Haloidderivate. I. Metabromtoluol und seine Derivate", *Justus Liebigs Ann. Chem.* **1873**, *168*, 153-171.
- [238] a) G. Berhardt, H. Reile, H. Birnböck, T. Spruß, H. Schönenberger, "Standardized kinetic microassay to quantify differential chemosensitivity on the basis of proliferative activity", *J. Cancer Res. Clin. Oncol.* **1992**, *118*, 35-43;
b) H. Reile, H. Birnböck, G. Bernhardt, T. Spruß, H. Schönenberger, "Computerized determination of growth kinetic curves and doubling times from cells in microculture", *Anal. Biochem.* **1990**, *187*, 262-267;
c) H. Reile, T. Spruß, R. Müller, R. Gust, G. Bernhardt, H. Schönenberger, J. Engel, "Tumor inhibiting [1,2-bis(4-fluorophenyl)ethylenediamine]platinum(II) complexes. III. Evaluation of the mammary tumor inhibiting properties", *Arch. Pharm. (Weinheim)* **1990**, *323*, 301-306.
- [239] M. Dreger, H. Otto, G. Neubauer, M. Mann, F. Hucho, "Identification of phosphorylation sites in native lamina-associated polypeptide 2beta", *Biochemistry* **1999**, *38*, 9426-9434.

- [240] E. Harlow, D. Lane, *Antibodies: a laboratory manual*, Cold Spring Harbor Laboratory Press, Cold Spring Harbor, **1988**.