

## Curriculum Vitae

Prof. Dr. Dirk Muscat  
*born:* September 17. in Selters/Westerwald

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Germany  
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*Marital status:*  
married

*Nationality:*  
German

### 1. Current Situation

- Since 2003      **Professor** of material science of plastics at the **University of Applied Sciences Rosenheim**, Germany and **consultant** in research and application development in the field of plastics.
- 1998 - 2003      **Research co-ordinator and technical marketing** for hyperbranched resins at DSM Research, Geleen, the Netherlands.

### 2. Education in Chemistry

- 1995 - 1997      **Ph.D.** at the **Max Planck Institute for Polymer Research**, Mainz, Germany.
- 1989 - 1994      **Studies in chemistry** and diploma in chemistry at the **University of Mainz**, Germany  
Diploma thesis in organic and macromolecular chemistry at the **Max Planck Institute for Polymer Research**, Mainz, Germany.

### 3. Foreign Undergraduate Educational Experience

1992 - 1993                      **University of Toronto**, Toronto/Canada

### 4. Proficiency of languages

German: mother tongue  
English: fluent  
Dutch: fluent  
French: fluent  
Spanish: basic knowledge

### 4. Hobbies

jogging, skiing, stock exchange

## **Expertise**

**Synthesis**      Thorough practical experience in the methods of organic, inorganic, organo-metallic and polymer chemistry with emphasis on polymer synthesis.

**Analytical techniques**      Mass-spectrometry (EI, FD, FAB, TOF), UV/Vis/NIR-spectroscopy, ATR-FT-IR-spectroscopy, NMR-spectroscopy, (head-space) gas chromatography (GC), high performance liquid chromatography (HPLC), size exclusion chromatography (SEC), thermogravimetric analysis (TGA), differential scanning calorimetry (DSC), microscopy, permeation measurements, melt flow index (MFI), Ubbelohde and rotational viscosimetry, Karl-Fisher-Titration, climatic chamber, ageing tests, tensile strength

**Industrial Experience**      Resin synthesis, cross linking systems (coating and dental fillings), paper chemicals, washable inks, nano-composites, lubricants, oil field chemicals, additives for dispersions, polymer processing, cosmetics, dyeing of plastics, polyethylene and polypropylene membranes, breast prosthesis, fillings, polymer analysis, scale-up, high performance polymers, nano-composites

**Teaching experience**      Material science of plastics, polymer chemistry, general chemistry

## What else you should know about me...

I am a team player and due to my open personality and communicational skills, I can easily adapt to new environments and situations.

My ability to explain scientific topics in a clear, precise and easily comprehensible manner is paramount in motivating my students. Through my work as professor I am up to date with the latest developments in material science and through my consultancy work I have experience in transforming ideas into business. Passing on this knowledge to students provides me with an exciting challenge.

## Publications

### Papers:

Y. Geerts, D. Muscat, K. Müllen, „Synthesis of oligo[2]catenanes“, *Macrom. Chem. Phys.*, **196**, 1995, 3425-3435

J.-L. Weidman, J.-M. Kern, J.-P. Sauvage, Y. Geerts, D. Muscat, K. Müllen, „Poly[2]-catenanes containing alternating topological and covalent bonds“, *Chem. Commun.*, 1996, 1243-1244

D. Muscat, A. Witte, W. Köhler, K. Müllen, „Synthesis of a novel poly[2]-catenane containing rigid catenanes“, *Macrom. Rapid Commun.*, **18**, 1997, 233-241

D. Muscat, W. Köhler, H. J. Räder, K. Martin, S. Mullins, B. Mueller, K. Müllen, Y. Geerts, „Synthesis and characterization of poly[2]-catenanes containing rigid catenane segments“, *Macromolecules*, **32**, 1999, 1737-1745

J.-L. Weidman, J.-M. Kern, J.-P. Sauvage, D. Muscat, S. Mullins, W. Köhler, C. Rosenauer, H. J. Räder, K. Martin, Y. Geerts, „Poly[2]-catenanes and cyclic oligo[2]catenanes containing alternating topological and covalent bonds: synthesis and characterization“, *Chem. Eur. J.*, **5**, 1999, 1841-1851

R. A. T. M. van Benthem, D. Muscat, D. A. W. Stanssens, „New commercially available hyperbranched polymers - for tailor made solutions“, *A. C. S. Polym. Mat. Sci. Eng. Preprints*, **80**, 1999, 78-79

D. Muscat, G. Kwakkenbos, R. A. T. M. van Benthem, C. de Koster, R. Fokkens, N. Nibbering, „In Source Decay of Hyperbranched Polyesteramides in MALDI-TOF-MS“, *J. Am. Soc. Mass. Spectrom.*, **11**, 2000, 218-227

R. A. T. M. van Benthem, M. Mak, P. Hendriks, P. Froehling, D. Stanssens, D. Muscat, „HYBRANE™ - DSM's new dendritic polymers“, abstract book of the 1<sup>st</sup> International Dendrimer Symposium, Frankfurt, October 1999

D. Muscat, R. A. T. M. van Benthem, R. Green, P. E. Froehling, D. A. W. Stanssens, „Hyperbranched polyesteramides - new products and applications“,

*A. C. S. Polym. Mat. Sci. Eng. Preprints*, **84**, 2001, 291-292

R. A. T. M. van Benthem, E. Gelade, C. G. de Koster, T. J. G. Zwartkruis, D. Muscat, „Synthesis and characterization of bis(2-hydroxypropyl)amide-based hyperbranched polyesteramides“, *A. C. S. Polym. Mat. Sci. Eng. Preprints*, **84**, 2001, 939-940

R. A. T. M. van Benthem, N. Meijerink, E. Gelade, C. G. de Koster, Dirk Muscat, P. E. Froehling, P. H. M. Hendriks, C. J. A. A. Vermeulen, T. J. G. Zwartkruis, „Synthesis and characterization of bis(2-hydroxypropyl)amide-based hyperbranched polyesteramides“, *Macromolecules*, **34** (11), 2001, 3559-3566

#### Books:

D. Muscat, R. A. T. M. van Benthem, „HYBRANE™ - new dendritic polymers“, *Topics in Current Chemistry, Dendrimers III*, Vol. 212, 41-80, ISBN 3-540-67828-X

#### Patents:

- EP 1081176: Process for the preparation of a condensation polymer
- EP 1127931: A process for the preparation of a heat curable paint binder composition
- EP 1149854: Toner composition
- WO01/62865: A process for the preparation of a heat curable paint binder composition
- EP 1306401: Oil soluble hyperbranched polyesteramides and method for making the same
- EP 1319698: Method for hotmelt application
- EP 1321493: Method for enhancing the solubility of a colorant
- EP 1382643: Polyesteramide barrier film layer and its use
- EP 1424362: Process for preparing a composition
- EP 2133042: Breast prosthesis
- EP 1440107: Oil soluble hyperbranched polyesteramides
- NL1017555C: Preparation of branched polymer for recycling polymer waste, comprises contacting mono- or di-functional polymer with multifunctional compound in the presence of carbonyl bislactamate
- EP1263904: A process for the preparation of a heat curable paint binder composition
- EP1208134: A process for the preparation of a condensation polymer
- EP2133042: Breast Prosthesis

#### **Conference Proceedings:**

D. Muscat, Y. Geerts, K. Müllen, „Reactivity towards polycondensation of lactam [2]-catenanes“, **Abstract Book of the International Symposium of Polycondensation**, Paris, June 1996

**Lectures:**

„Synthesis of poly[2]-catenanes,, **Université Louis Pasteur**, Strasbourg, March 1997

„Hybrane™ - DSM's new dendritic polymers,, **A. C. S. Congress**, Anaheim, March 1999

„Hybrane™ - DSM's new dendritic polymers,, **1<sup>st</sup> International Dendrimer Symposium**, Frankfurt, October 1999

„Hyperbranched polyesteramides - new dendritic polymers,, **Université Louis Pasteur**, Strasbourg, December 1999

„Hybrane™ - DSM's new dendritic polymers,, **A. C. S. Congress**, San Diego, April 2001