Publications G. Beaucage

Total publications listed below: 91 and one edited book.

The number of times a paper has been cited is listed after the paper for those publications listed on *ISI Web of Science*, Thompson Scientific as of the end of August 2004.
Papers are listed in order of number of citations for each year from 1991 to present (as of August 2004). 12 papers are in preparation or are in the process of submission and are not listed. They deal with in situ SAXS measurements on aerosols (8 papers), sol-gel synthesis in aerosols (1 paper), semi-crystalline polymer films (2 papers), and polymeric networks (1 paper).

2004

Probing the dynamics of nanoparticle growth in a flame using synchrotron radiation Beaucage G, Kammler HK, Mueller R, Pratsinis SE, Narayanan T. *Nature Materials* **3** (6): 370-374 (2004).
Citations 0.

Determination of branch fraction and minimum dimension of mass-fractal aggregates Beaucage G., *Physical Review E* **70**(3) (in press 9/2004).

Particle size distributions from small-angle scattering using global scattering functions. Beaucage, G. Kammler HK, Pratsinis SE, *J. Appl. Cryst.* **37**, 523-535 (2004).
Citations 0.

Reaction-induced phase separation controlled by molecular topology. Kulkarni A, Beaucage G. *Polymer* (accepted 8/2004).

In situ studies of nano-particle growth dynamics in premixed flames. Kammler HK, Beaucage G, Kohls DJ, Agashe N, Ilavsky J, Pratsinis SE *J. Appl. Phys.* (accepted 8/2004).

Non-agglomerated dry silica nanoparticles. Mueller R, Kammler HK, Pratsinis SE, Vital A, Beaucage G, Burtscher P *Powder Tech.* **140** (1-2): 40-48 (2004).
Citations 0.

Structure of flame-made silica nanoparticles by ultra-small-angle X-ray scattering Kammler HK, Beaucage G, Mueller R, Pratsinis SE *Langmuir* **20** (5), 1915-1921 (2004).
Citations 2.

Structure of arylene-bridged polysilsesquioxane xerogels and aerogels. Schaefer DW, Beaucage G, Loy DA, Shea KJ, Lin JS *Chemistry of Materials* **16** (8), 1402-1410 (2004).
Citations 0.

Sol-gel condensations to form polytetrahydrofuran networks and their elastomeric behavior. Hassan MK, Abdel-Sadek GG, Beaucage G, Mark JE, Sharaf MA *J. Macromol. Sci.-Pure Appl. Chem.* **A41** (1), 1-13 (2004).
Citations 0.

Disposable Smart lab on a chip for point-of-care clinical diagnostics. Ahn CH, Choi JW, Beaucage G, Nevin JH, Lee JB, Puntambekar A, Lee JY *Priceedings of the IEEE* **92** (1), 154-173 (2004).
Citations 1.

2003
3D Hierarchical orientation in polymer-clay nanocomposite films Bafna A, Beaucage G, Mirabella F *Polymer* **44** (4), 1103-1115 (2003).
Citations 5.

The effect of external electric fields during flame synthesis of titania. Kammler HK, Jossen R, Morrison PW, Pratsinis SE, Beaucage G *Powder Tech.* **135,** 310-320 Sp. Iss. (2003).
Citations 1.

A functional on-chip pressure generator using solid chemical propellant for disposable lab-on-a-chip. Hong CC, Murugesan S, Kim S, Beaucage G, Choi JW, Ahn CH *Lab on a Chip.* **3**(4), 281-286 (2003).
Citations 1.

Preparation and characterization of some unusually transparent poly(dimethylsiloxane) nanocomposites. Rajan GS, Sur GS, Mark JE, Schaefer DW, Beaucage G *J. Polym. Sci. Part B Polym. Phys.* **41**(16), 1897-1901 (2003).
Citations 1.

Structure-property relationships for poly(dimethylsiloxane) networks in situ filled using titanium 2-ethylhexoxide and zirconium n-butoxide. Murugesan S, Mark JE, Beaucage G *Synthesis and Propperties of Silicones and Silcone-Modified Materials, ACS Symposium Series* 838, 163-169 (2003).

Analysis of average particle size in flame-made oxide nanoparticles using ultra small-angle x-ray scattering and nitrogen adsorption. Kammler, H. K.; Beaucage, G.; Mueller, R.; Pratsinis, S. E. *Chemie-Ingenieur-Technik* **75**(8) 1138-1139 **(**2003).

A disposable plastic biochip cartridge with on-chip power sources for blood analysis Choi J-W, Puntambekar A, Hong C-C;, Gao C, Zhu X, Trichur R, Han J, Chilukuru S, Dutta,M, Murugesan,S, Kim,S, Sohn,Y-S, Nevin,JH.; Beaucage,G, Lee J-B, Ahn CH *Proceedings of the IEEE Micro Electro Mechanical Systems (MEMS)* 447-450 (2003).

A functional on-chip pressure generator using solid chemical propellant for disposable lab-on-a-chip. Hong C-C, Murugesan S, Kim S, Beaucage G, Choi, J-W, Ahn, CH *Proceedings of the IEEE Micro Electro Mechanical Systems (MEMS)* 16-19 (2003).

2002

Bottom-up synthesis of polymer nanocomposites and molecular composites: Ionic exchange with PMMA latex. Rossi GB, Beaucage G, Dang TD, Vaia R *Nano Letters* **2**(4), 319-323 (2002).
Citations 5.

Non-agglomerated Fumed Silica Nano-particles. Muller R, Vital A, Kammler HK, Pratsinis SE, Beaucage G *Chemie Ingenieur Technik* **74**(5), 543-544 (2002).
Citations 3.

Relation of the fractal structure of organic pigments to their performance Skillas G, Beaucage G, Agashe N, Kohls DJ *J. Appl. Phys.* **91**(9), 6120-6124 (2002).
Citations 2.

Rational design of reinforced rubber Kohls DJ, Beaucage G *Curr. Opin. Solid St. M.* **6**(3), 183-194 (2002).
Citations 1.

Fabrication and characterization of planar and channel polymer waveguides. III. Compositional distribution and solute loss in polymer thin films. Banach MJ, Clarson SJ, Beaucage G, Benkoski J, Mates T, Kramer EJ, Vaia RA *J. Appl. Polym. Sci.* **86**(8), 2021-2024 (2002).
Citations 1.

A structural model for equilibrium swollen networks. Sukumaran SK, Beaucage G *Europhysics Letters* **59**(5), 714-720 (2002)
Citations 1.

Surface modification of cyclic olefinic copolymers for bio-mems microfluidic devices. Ahn C, Kim S, Chao H, Murugesan S, Beaucage G *Materials Research Society Symposium - Proceedings* **729** 131-136 (2002).

Disposable smart plastic biochips for clinical diagnostics. Ahn CH, Choi J-W, Kim, S, Sohn, Y-S, Puntambekar,A, Murugesan,S, Beaucage G, Nevin JH *Materials Research Society Symposium-Proceedings* **729** 29-38 (2002).

2001

PEO-PPO-PEO block copolymer micelles in aqueous electrolyte solutions: Effect of carbonate anions and temperature on the micellar structure and interaction. Sukumaran S, Beaucage G, Mao GM, Thiyagaran P *Macromolecules* **34**(3), 552-558 (2001).
Citations 12.

Morphological study of HDPE blown films by SAXS, SEM and TEM: a relationship between the melt elasticity parameter and lamellae orientation. Prasad A, Shroff R, Rane S, Beaucage G *Polymer* **42**(7), 3103-3113 (2001).
Citations 3.

Carbon coated silica for elastomer reinforcement Kohls DJ, Beaucage G, Pratsinis SE, Kammler HK, Skillas G. *Materials Research Society Symposium-Proceedings* **661** 941-952 (2001).
Citations 3.

Optical properties and orientation in polyethylene blown films. Bafna A, Beaucage G, Mirabella F. *J. Polym. Sci, Pol. Phys.* **39**(23), 2923-2936 (2001).
Citations 2.

2000
Multilevel structure of reinforcing silica and carbon. Schaefer DW, Rieker T, Agamalian M, Beaucage G *J. Appl. Crystallogr.* **33**(1), 587-591 Part 3 (2000).
Citations 7.

Relaxation of polymer thin films in isothermal temperature-jump measurements Beaucage G, Banach MJ, Vaia RA *J. Polym. Sci., Pol. Phys.* **38**(22), 2929-2936 (2000).
Citations 1.

1999
Structural analysis of polydimethylsiloxane (PDMS) modified silica xerogels. Guo L., Hyeon-Lee J, Beaucage G *J. Non-Crystalline Solids* **243** 61-69 (1999).
Citations 23.

Morphology of polyethylene-carbon black composites. Beaucage G, Rane S, Schaefer DW, Long G, Fischer D *J. Polym. Sci. Polym. Phys.* **37**, 1105-1119 (1999).
Citations 11.

Dependence of silica particle sizes on network chain length, silica contents and catalyst concentrations in in situ-reinforced polysiloxane elastomers. Breiner JM, Mark JE, Beaucage G *J. Polym. Sci. Poly. Phys.* **37**(13), 1421-1427 (1999).
Citations 6.

Structure and growth kinetics of zirconium hydrous polymers in organic solutions. Singhal A, Beaucage G, Harris MT, Toth LM, Keefer KD, Lin JS, Hu MZC, Peterson JR, *J. Non-cryst. Solids* **246**(3), 197-208 (1999).
Citations 5.

Glassy polystyrene composites having zeolite 13X or vycor as a dispersed inorganic phase. Maaref S, Frisch HL, Rajan GS, Beaucage G *J. Macromol. Sci. Pure.* **36**(12), 1895-1906 (1999). (Correction: *J. Macromol. Sci. Pure.* **37**(5) 525-525 (2000).)
Citations 3.

Aero-sol-gel reactor for nano-powder synthesis. Beaucage G, Hyeon-Lee J, Kohls DJ, Pratsinis SE *J. Nanoparticle Research* **1** 379–392 (1999).
Citations 1

Some attempts to force poly(dimethylsiloxane) chains through zeolite cavities to improve elastomer reinforcement. Pu Z, Mark JE, Beaucage G *Rubber Chem. Tech.* **72**, 138-151 (1999).
Citations 1.

Kinetics of morphological development in elastomer modified silica xerogels. Beaucage G, Guo L, Hyeon-Lee J *Rubber Chem. Tech.* **72**, 130-137 (1999).
Citations 0.

1998
Fractal analysis of flame-synthesized nanostructured silica and titania powders using small-angle X-ray scattering. Hyeon-Lee J, Beaucage G, Pratsinis SE *Langmuir* **14**(20), 5751-5756 (1998).
Citations 16.

Isotatic polypropylene foams crystallized from compressed propane solutions. Whaley PD, Kulkarni S, Ehrlich P, Stein RS, Winter HH, Beaucage G *J. Polym. Sci., Part B: Polym. Phys.* **36**(4), 617-627 (1998).
Citations 3.

Macroscopic polymer analogues. Beaucage G, Sukumaran S, Rane S *J. Polym. Sci Pol. Phys.* **36**(17), 3147-3154 (1998).
Citations 1.

Structural Investigation of a Surfactant-Templated Silica Aerogel by Small-Angle Scattering. Rieker TP, Anderson MT, Sawyer PS, Rane S, Beaucage G in *Nanostructured Powders and Their Industrial Application* eds. G. Beaucage, J. E. Mark, G. T. Burns, D-W Hua, Materials Research Society, Warrendale PA, 95-102 (1998).

Synthesis of Nanostructured Silica Powders by a Room-Temperature Aerosol Process. Hyeon-Lee J, Beaucage G, Pratsinis SE in *Nanostructured Powders and Their Industrial Application* eds. G. Beaucage, J. E. Mark, G. T. Burns, D-W Hua, Materials Research Society, Warrendale PA, 115-122 (1998).

Preparations, structures and properties of polysiloxane-silica composites prepared from a variety of hydrolyzable precursors Breiner JM, Mark JE, Beaucage G in *Nanostructured Powders and Their Industrial Application* eds. G. Beaucage, J. E. Mark, G. T. Burns, D-W Hua, Materials Research Society, Warrendale PA, 275-286 (1998).

1997
Crystal Structures of Monodisperse Colloidal Silica in Poly (Methyl acrylate) Films. Jethmalani JM, Ford WT, Beaucage G *Langmuir* **13**(13), 3338-3344 (1997) and *Langmuir* **13**(20), 5515-5515 (1997).
Citations 26

Growth and Structure of Zirconium Hydrous Polymers in Aqueous Solutions. Singhal A, Toth LM, Beaucage G, Lin JS, Peterson J *Journal of Colloidal and Interface Science* **194**(2), 470-481 (1997).
Citations 11.

Persistence Length of i-Poly(Hydroxy-Butyrate). Beaucage G, Rane S, Sukumaran S, Satkowski MM, Schechtman LA, Doi Y *Macromolecules* **30**, 4158-4162 (1997).
Citations 7.

Aero-Sol-Gel Synthesis of Nanostructured Silica Powders Hyeon-Lee J, Beaucage G, Pratsinis SE *Chemistry of Materials* **9**(11) 2400-2403 (1997).
Citations 4

1996
Small-Angle Scattering from Polymeric Mass Fractals of Arbitrary Mass-Fractal Dimension. Beaucage G *J. Appl. Crystallogr.* **29**, 134-146 (1996).
Citations 47.

Symmetric, Isotopic Blends of Poly(dimethylsiloxane). Beaucage G, Sukumaran S, Clarson SJ, Kent MS, Schaefer DW *Macromolecules* **29**(26), 8349-8356 (1996).
Citations:16.

Interpenetrating and pseudo-interpenetrating polymer networks of poly(ethyl acrylate) and zeolite 13X, Frisch HL, Maaref S, Xue Y, Beaucage G, Pu Z, Mark JE *J. Polym. Sci., Part A: Polym. Chem.* **34**(4), 673-677 (1996).
Citations 14.

Morphological development in PDMS/TEOS hybrid materials. HyeonLee J, Guo L, Beaucage G, MacipBoulis MA, Yang AJM *J. Polym. Sci., Polym. Phys.* **34**(17), 3073-3080 (1996).
Citations 8.

Nano-Structured, Semicrystalline Polymer Foams. Beaucage G, Aubert JH, Lagasse RR, Schaefer DW, Rieker TP, Ehrlich P, Stein RS, Kulkarni S, Whaley PD *J. Polym. Sci., Part B: Polym. Phys.* **34**(17), 3063-3072 (1996).
Citations 7.

Small angle X-ray scattering investigations of zeolite-penetrated poly(ethyl acrylate) composites. Pu ZC, Mark JE, Beaucage G, Maaref S, Frisch HL J. Polym. Sci., Polym. Phys. **34**(15), 2657-2660 (1996).
Citations 5.

Pseudo interpenetrating polymer networks and interpenetrating polymer networks of zeolite 13 X and polystyrene and poly(ethyl acrylate). Frisch HL, Xue YP, Maaref S, Beaucage G, Pu ZC, Mark JE *Macromolecular Symp.* **106**, 147-166 (1996).
Citations 5.

From small angle x-ray scattering to reflectivity: instrumentation and sample study. Hua DW, Beaucage G, Kent MS, *J. Mater. Res.* **11**(2), 273-276 (1996).
Citations: 0.

The in-situ generation of silica reinforcement in modified polydimethylsiloxane elastomers. Prabakar S, Bates SE, Black EP, Ulibarri TA, Schaefer DW, Beaucage G, Assink RA *Mater. Res. Soc. Symp. Proc.* **435**(Better Ceramics through Chemistry VII: Organic/Inorganic Hybrid Materials), 469-474 (1996).

In-situ generation of silica reinforcement in modified polydimethylsiloxane elastomers. Prabakar S, Bates SE, Black EP, Ulibarri TA, Schaefer DW, Beaucage G, Assink RA *Materials Research Society Symposium Proceedings* **435** 469-474 (1996).

Origin of porosity in arylene-bridged polysilsesquioxanes. Schaefer DW, Beaucage G, Loy DA, Ulibarri TA, Black E, Shea KJ, Buss RJ *Materials Research Society Symposium Proceedings* **435** 301-306 (1996).

Solvent effects on silica domain growth in silica/siloxane composite materials. Ulibarri TA, Bates SE, Black EP, Schaefer DW, Beaucage G, Lee MK, Moore PA, Burns GT *International SAMPE Technical Conference* **27** 560-567 (1995).

1995
Approximations leading to a unified exponential/power-law approach to small-angle scattering. Beaucage G *J. Appl. Crystallogr.* **28**(6), 717-728 (1995).
Citations 67.

Neutron Reflectivity Studies of End-Grafted Polymers. Mansfield TL, Iyengar DR, Beaucage G, McCarthy TJ, Stein RS, Composto RJ *Macromolecules* **28**(2), 492-499 (1995).
Citations 22.

Origin of Porosity in Resorcinol-Formaldehyde Aerogels. Schaefer DW, Pekala R, Beaucage G *J. Non-Cryst. Solids* **186** 142-148 (1995).
Citations 21.

Structural analysis of silica aerogels, Hua DW, Anderson J, Di Gregorio J, Smith DM, Beaucage *G J. Non-Cryst. Solids* **186** 142-148 (1995).
Citations 7.

Sol-gel-derived silica-siloxane composite materials. Effect of reaction conditions in polymer-rich systems. Black EP, Ulibarri TA, Beaucage G, Schaefer DW, Assink RA, Bergstrom DF, Giwa-Agbomeirele PA, Burns GT *ACS Symp. Ser.* **585**(Hybrid Organic--Inorganic Composites), 237-246 (1995).

Multiple size scale structures in silica-siloxane composites studied by small-angle scattering. Beaucage G, Ulibarri TA, Black EP, Schaefer DW *ACS Symp. Ser.* **585**(Hybrid Organic--Inorganic Composites) 97-111 (1995).

Characterization of Porosity in Ceramic Materials by Small-angle Scattering: Vycor Glass and Silica Aerogel. Schaefer DW, Beaucage G, Brow RK, Olivier BJ, Rieker T, Hrubesh L, Lin JS, in *Modern Aspects of Small-Angle Scattering*, H. Brumberger Ed., Kluwer Academic Publishers, Netherlands 299-305 (1995).

1994

Structural studies of complex systems using small-angle scattering: a unified Guinier/power-law approach. Beaucage G, Schaefer DW, *J. Non-Cryst. Solids* **172-174**(Pt. 2), 797-805 (1994). Citations 38.

Time-of-Flight Secondary Ion Mass Spectrometry of Deuterated Linear Poly(dimethylsiloxane). Zhang X, Stuart JO, Clarson SJ, Sabata A, Beaucage G *Macromolecules* **35**, 2716-2724 (1994). Citations 12.

Light scattering from random coils dispersed in a solution of rod-like polymers. Jamil T, Russo, PS, Negulescu I, Daly WH, Schaefer DW, Beaucage G *Macromolecules* **27**(1), 171-178 (1994). Citations 9.

Crystallinity of Fully Aromatic Thermotropic Polyesters of 3,3'-bis(Phenyl)-4,4'-Biphenol and 1, 1'-Binaphthyl-4,4'-Diol. Bhowmik PK, Beaucage G *J. Polym. Sci., Part B: Polym. Phys.* **32**, 1023-1031 (1994).
Citations 8.

Structure and Topology of Silica Aerogels During Densification, Schaefer DW, Olivier BJ, Ashley C, Beaucage G, Fischer DA *J. Non-Cryst. Solids* **172-174** (Pt. 1), 647-655 (1994). Citations 6.

Pore morphology study of silica aerogels. Hua DW, Anderson J, Hereid S, Smith DM, Beaucage G *Mater. Res. Soc. Symp. Proc.* **346**(Better Ceramics through Chemistry VI), 985-990 (1994).

General Routes to Porous Metal Oxides via Inorganic and Organic Templates. Roger C, Hampden-Smith MJ, Schaefer DW *J. Sol-Gel Sci. Technol.* ***2***, 67-72 (1994).

Mechanical behavior and morphology of tactic poly(vinyl methyl ether)/polystyrene blends, Beaucage G Stein RS *Polymer* **35**(13), 2716-2724 (1994).

Phase separated polymer alloys with reduced brittleness. Beaucage G, Stein *RS US Patent 533,828* (1994).

1993

Ellipsometric study of the glass transition and thermal expansion coefficients of thin polymer films. Beaucage, G, Composto R, Stein RS*, J. Polym. Sci., Part B: Polym. Phys.* **31**(3) 319-326 (1993). Citations 47.
Citations 47.

Tacticity effects on polymer blend miscibility. 2. Rate of phase separation. Beaucage G, Stein RS *Macromolecules* **26**(7), 1609-1616 (1993).
Citations 25.

Tacticity effects on polymer blend miscibility. 1. Flory-Huggins-Staverman analysis. Beaucage, G, Stein RS, Koningsveld R *Macromolecules* **26**(7), 1603-1608 (1993).
Citations 11.

Tacticity effects on polymer blend miscibility. 3. Neutron scattering analysis. Beaucage G, Stein RS *Macromolecules* **26**(7), 1617-1626 (1993).
Citations 8.

Multiple size scale structures in silica/siloxane composites studied by small-angle scattering. Beaucage G, Schaefer DW, Ulibarri T, Black E *Polym. Mater. Sci. Eng.* **70**, 268-269 (1993).

Sol-gel derived silica/siloxane composite materials: The effect of loading level and catalyst activity on silica domain formation. Black EP, Ulibarri TA, Beaucage G, Schaefer DW, Assink RA, Bergstrom DF, Giwa-Agbomeirele PA, Burns GT *Polym. Mater. Sci. Eng.* **70**, 382-383 (1993).

1992

A SANS Study of In situ Filled Polydimethylsiloxane. Schaefer DW, Ulibarri TA, Beaucage G, *Sub-Micron Multi-Phase Materials*, Ed. R. H. Baney, Materials Research Society Symposium Proceedings **274**, Materials Research Society, Pittsburgh, PA, 85-90 (1992).

Molecular weight dependence of domain structure in silica-siloxane molecular composites. Ulibarri TA, Schaefer DW, Beaucage G, Olivier BJ, Assink R *Mater. Res. Soc. Symp. Proc.* **274** (Submicron Multiphase Materials) 91-95 (1992).

The volume fraction profile of terminally adsorbed polymers. Composto RJ, Mansfield T, Beaucage G, Stein RS, Iyengar DR, Mc Carthy TJ, Satija SK, Ankner JF, Majkrzak CF *Mater. Res. Soc. Symp. Proc.* **248** (Complex Fluids), 407-412 (1992).

Neutron reflectivity study of concentration profile of polystyrene polymer brushes. Satija SK, Ankner JF, Majkrzak CF, Mansfield T, Beaucage G, Stein RS, Iyengar DR, McCarthy TJ, Composto RJ *Polym. Mater. Sci. Eng.* **67**, 159-160 (1992).

1991

Tacticity effects on polymer blend miscibility. Beaucage G, Stein RS, Hashimoto T, Hasegawa H *Macromolecules* **24**(11), 3443-3448 (1991).
Citations 25.

Structure of Combustion Aerosols. Schaefer DW, Olivier BJ, Beaucage G, Hurd AJ, Ivie JJ, Herd CR *J. Aerosol Sci.* **22**, Suppl. 1, S447-450 (1991).
Citations 4.

Polymer blend miscibility and phase separation kinetics analyzed using Flory-Huggins-Staverman Theory. Stein RS, Beaucage G, Berard MT, Koningsveld R *Polymer Preprints* Division of Polymer Chemistry, American Chemical Society **32** 475-476 (1991).

Editorial:

Nanostructured Powders and Their Industrial Application editors G. Beaucage, J. E. Mark, G. T. Burns, D-W Hua, Materials Research Society, Warrendale PA, (1998).

Jorunal of Nanoparticle Research Issue 1(2) 1999 guest editors S. E. Pratsinis, G. Beaucage