

Curriculum Vitae

Personal Details

Name: Antony (Ant) Keith Van Dyk

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Date of Birth: 19/12/1957 *Age:* 50

Place of Birth: Wanganui, New Zealand

Citizenship: New Zealand; US Permanent Resident

Marital Status: Married *Dependants:* Twin boys, aged 16

Health: Excellent

Qualifications

Ph.D. in Applied Mathematics	Massey University	1997
Diploma in Science in Mathematics	Massey University	1990
Diploma in Computer Programming	International Correspondence Schools	1988
B.Sc. (Hons) in Physics	Otago University	1981

Professional Memberships

ACS (American Chemical Society)	2005- present
PSCT (Pennsylvania Society of Coatings Technology), FSCT (Federation of Societies of Surface Coatings Technology)	2003-present
ATSC, International Professional Grade of Associate in Surface Coatings Technology	1998- present
SCANZ Inc (Surface Coatings Association of New Zealand)	1989- present

Training Courses

Leadership Fundamentals, Self Directed Work Teams, Time Management, Technical Management, Six Sigma, First Aid, St John Ambulance, ISO9000 Auditing, ISO9000 Quality Systems

Personal and Professional Strengths

- Creative and independent thought
- Self motivated and responsible
- Enjoy work in a multidisciplinary team environment
- Technical knowledge and experience
- Scientific curiosity
- Product development

Career Overview

Rohm and Haas 2001 to present.

2006-present: I started work in the Additives department in 2006 and worked on HASE rheology modifiers with novel synthesis processes, novel compositions and monomers, and structures including living radical polymerization (LRP) structure polymers. New proprietary analytical techniques were developed to characterize these novel polymers. I'm currently working on novel HEUR thickeners. My work involves leading colloid science for synthesis and applications chemists, project management, and has interaction with Rohm and Haas analytical scientists, NAR and global sales, marketing, technical service and customers.

2004-2006: I worked in our Digital Imaging department with Dr George Lein and developed a new polymeric dispersant, a range of colorants using this new dispersant, and inkjet ink formulations to support technical services and customers. I researched optical density (OD), color gamut, pigment encapsulation and control of colloid stability and optical properties of jetted inks. I used rheometers, surface tension instruments and acoustic spectrometry (Dispersion Technology DT-1200) to determine colloid stability properties such as zeta potentials, and optical colorimetry and color theory and microscopy to determine optical properties.

2001-2003: I began work at Rohm and Haas on polymer nano-particles (PNPs), PNP dispersants, PNP additives, and PNP colorants.

2002-present: A colleague (Dr. A. Nakatani) and I have been researching the fundamental mechanisms of viscosity development in slurries, polymer solutions and dispersions (for example see p26-27 of the 2006 NIST Annual Report <http://www.ncnr.nist.gov/AnnualReport/FY2006/AR2006.pdf>). Our research involves using ultra small angle neutron scattering (USANS) and neutron contrast matching to measure colloidal structure – property relationships of colloidal dispersions of mixed particles (polymer stabilized TiO₂ slurries and TiO₂ pigmented latex paints) under shear and containing various dispersants and thickeners. Our work has found that viscosity development is related to the fractal dimension and correlation length of colloidal clusters which is controlled by additives and colloid surface chemistry.

Resene Paints Ltd 1982 to 2001.

Employed by Resene Paints Ltd as the Research and Development Manager to lead the R&D Laboratory. The position involved significant interaction with sales, marketing, technical, and production departments. I developed many products and product lines in architectural and industrial coatings, colorants, fillers, sealers, and cosmetics (face paints).

I developed a new theory of corrosion prevention by paint coatings and began part time study for PhD in mathematics 1991. Developed and solved a mathematical model of corrosion prevention by paint coatings (completed PhD 1997). Initiated and carried out redesign and testing of Resene products to create the only comprehensive range of Environmental Choice paints in New Zealand. I researched and implemented solutions to an industry wide problem of paint skinning in pails 1998-99.

Professional Achievements

- Novel rheology modifiers
- Polymeric dispersant and inkjet colorants
- Advances in the understanding of the mechanism of viscosity generation in colloids related to fractal dimension and correlation length of colloidal clusters.
- Product development for Resene Paints Ltd with cumulative sales over \$NZ1B.
- Developed and mathematically modeled a new theory of corrosion of metals under paint films and identified targets for improved coating performance.
- Researched and developed solutions to an industry wide problem of paint skinning in pails.

Career Objectives

- To work at the cutting edge of technology.
- Develop deeper and broader expertise in colloid and polymer science.
- Apply technical knowledge to innovative product development.
- Work in a multidisciplinary product research, development and support role.

Referees

Dr Mark Schure
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Patents and Publications

8. US2006/0241209 A1 Colorants, Dispersants, Dispersions, and Inks

Madle, Thomas Glenn; Thompson, Marlon; Van Dyk, Antony Keith
Colorant, dispersants, dispersions, and inks are provided which include PNP's having a mean diameter in the range of from 1 to 20 nanometers, and a second polymeric component comprising certain hydrophilic and hydrophobic groups. Also provided are methods for preparing colorants, dispersants, dispersions, and inks which include PNP's and a second polymeric component comprising certain hydrophilic and hydrophobic groups.

7. EP 1 433 797 A1 Pigmentation polymer composition

Brown, Ward Thomas; Van Dyk, Antony Keith

A pigmented polymer composition containing colorant particles and polymer particles having phosphorus acid groups is provided. The polymer particles are prepared from the low pH polymerization of phosphorus acid

monomer, or alternatively, are substantially free of water soluble polymer bearing phosphorus acid groups. A method for preparing colored coatings from the pigmented polymer composition is also provided. Colored coatings have improved color properties.

US2004/0122131 A1 Pigmentation polymer composition

Brown, Ward Thomas; Van Dyk, Antony Keith

6. EP 1 371 679 A1 Aqueous composition containing polymeric nanoparticles

Devonport, Wayne; • Even, Ralph Craig; • Hermes, Ann Robertson; • Van Dyk, Antony Keith; • Lorah, Dennis Paul; • Tanzer, Joseph David

An aqueous composition including an aqueous dispersion of polymeric nanoparticles having a mean diameter of from 1 to 50 nanometers, the particles including, as polymerized units, at least one multi-ethylenically-unsaturated monomer and at least one ethylenically unsaturated water soluble monomer is disclosed. Certain embodiments of the composition include pigment particles and other polymer particles. The aqueous compositions include aqueous coating compositions.

5. EP 1 371 685 A2 Aqueous polymeric composition containing polymeric nanoparticles and treatments prepared therefrom

Amick, David Richard; Devonport, Wayne; • Van Dyk, Antony; • Finegan, Catherine Ann; • Hoefler, Joseph Michael; • Lorah, Dennis Paul; • Maurice, Alvin Michael

An aqueous polymeric composition containing select polymeric nanoparticles is provided. The select polymeric nanoparticles contain as polymerized units at least one multiethylenically unsaturated monomer and at least one water soluble monomer, and have a mean diameter in the range of from 1 to 50 nanometers. Also provided are aqueous polymeric compositions that further contain second particles such as pigment particles or second polymer particles. The aqueous polymeric composition is useful for preparing coatings having at least one improved property compared to a coating absent the select polymeric nanoparticles. Further, the aqueous polymeric composition is useful for treating wood. A coating prepared from the aqueous polymeric composition is also provided.

US7091275 B1 Aqueous polymeric composition containing polymeric nanoparticles and treatments prepared therefrom

Amick, David Richard; Devonport, Wayne; • Van Dyk, Antony; • Finegan, Catherine Ann; • Hoefler, Joseph Michael; • Lorah, Dennis Paul; • Maurice, Alvin Michael

4. EP 1 371 688 A2 Colorants, dispersants and dispersions containing polymeric nanoparticles

Van Dyk, Antony; • Lorah, Dennis Paul

Colorants, dispersants, and dispersions are provided which include PNPs having a mean diameter in the range of from 1 to 50 nanometers, an acid value in the range of from 0 to 700 mg KOH/g PNP solids, an amine value in the range of from 0 to 250, a hydroxyl number in the range of from 0 to 250 mg KOH/g PNP solids, and containing at least 2 wt% of a polarizable group. Also provided are methods for preparing colorants, dispersants, and dispersions, which include PNPs.

US7273842 B1 Colorants, dispersants and dispersions containing polymeric nanoparticles. Van Dyk, Antony; • Lorah, Dennis Paul

3. EP 1 245 644 A2 Colorants, dispersions, dispersants and inks

Gore, Robert Howard; • Langenmayr, Eric Jon; • Machleder, Warren Harvey; • Lorah, Dennis Paul, Lansdale; • Van Dyk, Antony Keith; • Bortnick, Newman Mayer

Colorant, dispersants, dispersions, and inks are provided which include PNPs having a mean diameter in the range of from 1 to 50 nanometers, the PNPs including as polymerized units at least one multi-ethylenically-unsaturated monomer. Also provided are methods for preparing colorants, dispersants, dispersions, and inks which include PNPs.

US7189767 B2 Colorants, dispersions, dispersants and inks

Gore, Robert Howard; • Langenmayr, Eric Jon; • Machleder, Warren Harvey; • Lorah, Dennis Paul, Lansdale; • Van Dyk, Antony Keith; • Bortnick, Newman Mayer

Colorant, dispersants, dispersions, and inks are provided which include PNPs having a mean diameter in the range of from 1 to 50 nanometers, the PNPs including as polymerized units at least one multi-ethylenically-unsaturated monomer. Also provided are methods for preparing colorants, dispersants, dispersions, and inks which include PNPs.

2. US2004/0062894 A1 Method of packaging solvent or water based formulations to reduce skinning

Van Dyk, Antony Keith; Gooch, Colin

The present invention relates to packaging water or solvent based formulations, in particular to those formulations which are prone to skinning. The invention comprises a container that is adapted to contain such a formulation in which an anti-skinning layer is located between at least a portion of an internal surface of the container or a lid and the formulation.

WO 00/27725 Method of packaging solvent or water based formulations to reduce skinning

Van Dyk, Antony Keith; Gooch, Colin

1. WO 98/08894 Fixed base neutralized coating compositions

Van Dyk, Antony Keith; Gooch, Colin

A neutralized organic polymer for use in a film forming composition in which the emulsion contains a fixed base, at least 5% of which is a lithium base is provided. Also provided is a neutralized coating composition containing a fixed base, in which the fixed base comprises at least 5% weight/weight lithium base, with the proviso that the neutralised coating composition does not include a zinc silicate paint composition. Preferably the lithium base is lithium hydroxide which helps avoid the impairment of water resistance, improve application properties of paint compositions, improve stability and effectiveness of oxidative cure such as promoted through metal drier catalysts and achieve a lower degree of film yellowing than paint compositions comprising fixed base or amine components.

- Co-authored "A Diffusion –Reaction Model for Corrosion of Zinc Coated Steel under Polymer Paint Films" in Differential Equations and Applications to Biology and Industry, World Scientific, 1996.
- Presented papers at SCANZ Conferences 1997, 1999, 2000 and at the FSCT conference in Chicago 2005.
- Various articles published in the SCANZ magazine and on the SCANZ website www.scanz.org.nz.
- Authored four major reports and eleven technical reports for Rohm and Haas
- Paper in preparation for USANS Colloidal Stability under Shear.

Interests and Activities

- Walking and hiking
- Drawing, and watercolor and acrylic painting
- Practicing violin
- Judo