

**CHINA COAT
CONFERENCE**

中国国际涂料展学术会议

第十九届中国国际涂料展第十二次学术会议
12th CHINACOAT CONFERENCE

智能、生态友好及功能性涂料助剂 Smart, Eco-Friendly & Functional Coatings Additives

2014年12月1-2日 December 1-2, 2014 • 中国广州 Guangzhou, P.R. China

会议地点 Conference Venue:

广州香格里拉大酒店 Shangri-la Hotel Guangzhou



会议主办单位 Conference Organisers

Expo 新展星展览(深圳)有限公司
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会议程序 CONFERENCE PROGRAMME

12月1日(星期一) Monday, December 1st, 2014

- 12:30-13:30 与会代表报到及登记 Assembly & Registration
- 13:30-13:45 **第一节 序言 SESSION I – INTRODUCTION BY THE CHAIRMAN**
- 主题论文 KEYNOTE PAPER 1**
- 13:45-14:45 智能化及功能性助剂的科学原理及技术
Science & Technology of Smart and Functional Additives
- 论文 PAPER 2**
- 14:45-15:30 避免低颜料体积浓度 (PVC) 墙面涂料起泡的智能技术
A Smart Technology to avoid Blistering of Low PVC Wall Coating
- 15:30-15:50 小休 / 茶点 Coffee Break
- 论文 PAPER 3**
- 15:50-16:35 用于水性工业涂料的新型短链含氟表面活性剂
Novel Short-Chain Fluorosurfactants for Water-Based Industrial Coatings
- 论文 PAPER 4**
- 16:35-17:20 用于紫外光固化涂料的新一代高效消光剂
Next Generation High Efficient Matting Agents for UV Coatings
- 17:20-17:30 公开论坛 Discussion Session
- 17:30 第一天完 End of Day 1

12月2日(星期二) Tuesday, December 2nd, 2014

- 08:30-09:00 与会代表报到及登记 Assembly & Registration
- 09:00-09:15 **第二节 序言 SESSION II – INTRODUCTION BY THE CHAIRMAN**
- 主题论文 KEYNOTE PAPER 5**
- 09:15-10:15 现代添加剂技术 — 面向未来的观点
Modern Additive Technology — a View into the Future
- 10:15-10:35 小休 / 茶点 Coffee Break
- 论文 PAPER 6**
- 10:35-11:20 新型超润湿表面活性剂在涂料的应用
New Superwetting Surfactants for Coatings Applications
- 论文 PAPER 7**
- 11:20-12:05 增稠剂在优化涂料配方中的作用
The Role of Thickeners in Optimising Coatings Formulation
- 12:05-12:15 公开论坛 Discussion Session
- 12:15-13:30 午餐 Lunch
- 13:30-13:45 **第三节 序言 SESSION III – INTRODUCTION BY THE CHAIRMAN**
- 论文 PAPER 8**
- 13:45-14:30 干膜杀菌剂的发展
Developments in Dry Film Biocides
- 14:30-15:00 小休 / 茶点 Coffee Break
- 论文 PAPER 9**
- 15:00-15:45 用于工业涂料色浆的新型高性能研磨介质
New High Performance Grinding Medium for Industrial Coatings Colourants
- 论文 PAPER 10**
- 15:45-16:30 多功能性感温高分子形状记忆复合物
Multi-functional Thermochromic Polymeric Shape Memory Composites
- 16:30-17:00 公开论坛 Discussion Session
- 17:00 第二天及会议结束 End of Day 2 & Conference

助剂是增强所有涂料性能的重要组成部分。随着技术不断朝环保方向发展,出现了一系列新一代智能化助剂。这些新型低污染体系不仅实现了所替代产品的性能水平,还可显著地改善性能。现今要生产高质量产品,功能性助剂具有不可或缺的作用。通过赋予涂料优良的性价比,涂料助剂的全球营业额估计达65亿美元。

本次学术会议主题为「智能、生态友好及功能性涂料助剂」,适合管理和技术人员、从事涂料产品开发、配方、生产人员,以及计划推进产业和环保需求等人员参与。

Additives are important performance-enhancing ingredients essential for all coatings. As technology continues evolving toward environmentally friendly systems, a series of new generation smart additives has emerged. These new low-polluting systems not only achieve the performance levels of the replacing products, but also offer significant improvement. Today, quality products cannot be made without the use of functional additives. With an estimated turnover of US\$6.5 billion, coatings additives play a major role by imparting cost/performance package.

This Conference with theme of "Smart, Eco-Friendly & Functional Coatings Additives", will be of interest to executives and technical staff, and should help all involved in product development, formulation, production or planning to move forward with the needs and demands of the industry and environment.



Mr. Dip Dasgupta 先生

大会主席 CHAIRMAN

英国DD技术论坛
DD Technology Forum, UK

论文的演讲和讨论将以英语和普通话进行。Presentation of papers and post-presentation discussions will be conducted in both English and Chinese (Putonghua).



智能化及功能性助剂的科学原理及技术

Science & Technology of Smart and Functional Additives

智能聚合物和涂料在全球工业应用十分广泛。多功能性材料不仅具有传统性能，同时对外界刺激产生反应及呈现新颖功能，智能和功能性添加剂便是构成这种材料的必要成分。相关材料包括：可随 pH 值变化而变化的添加剂、某些纳米材料、变色剂、极性切换助剂及抗菌剂等。本文将对智能和多功能性材料的科学原理和技术、现有制备途径及产品实例进行讨论；还重点阐述当今全球研发趋势。

Smart polymers and coatings are widely used in global industries. Some multi-functional materials not only respond to external stimulus, but also render novel functions in addition to traditional properties. Smart and functional additives are one of the necessary ingredients of such coatings. Additives that respond to pH changes, some nanomaterials, colour changing, polarity switching and antimicrobial agents are among these materials. This paper will discuss the science and technology of smart and multifunctional materials, the present pathways and examples of such products. Current global R&D trends will also be highlighted.

论文 2 PAPER

避免低颜料体积浓度 (PVC) 墙面涂料起泡的智能技术

A Smart Technology to avoid Blistering of Low PVC Wall Coatings



Mr. Wernfried Heilen 先生
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技术市场部门副总裁
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水分在墙壁上的来源多样，一旦水分进入墙体，便需通过蒸发排出。墙面涂料必须处理这个问题。干燥过程会致使涂料产生高水蒸汽压力。如果涂层没有足够的透湿性，就会产生起泡、开裂或分层等损害。低 PVC 半光泽和光泽性墙面涂层通常只有有限的透湿性。为了保护这类涂料免受损害，开发了一项基于新型共粘合剂的新技术，为低 PVC 涂料提供优异的透湿性，从而降低涂料起泡和分层的风险。

The source of moisture in the wall can be multiple and once it is in the wall, it needs to go out by evaporation. Wall coatings must deal with this problem. The drying process creates high water vapour pressure under the coatings. If the coating has not enough water vapour permeability, damage by blistering, cracking or delamination will happen. Low PVC semi-gloss and glossy wall coats usually have limited vapour permeability. To protect them against damage, a new technology has been developed based on a new co-binder technology which provides low PVC coatings with excellent vapour permeability thus reducing the risk of blisters and delamination.

论文 3 PAPER

用于水性工业涂料的新型短链含氟表面活性剂

Novel Short-Chain Fluorosurfactants for Water-Based Industrial Coatings



廖蓉 女士 Mrs. Rong Liao
美国杜邦公司化学品与氟产品
亚太区技术经理
Asia Pacific Technology Leader,
DuPont Chemicals &
Fluoroproducts, USA

可持续的短链含氟表面活性剂和含氟防水剂(六个或更少的氟化碳原子)在涂料行业中愈来愈受关注。由于这项新技术在环境中无法分解成 PFOA 或 PFOS, 可赋予涂料卓越的性能及生态友好形象。本文重点研究短链含氟表面活性剂如何提高涂料性能, 尤其针对改善水性工业涂料的表面缺陷。它解决了用于一般金属涂料的水性环氧底漆和双组分水性聚氨酯面漆的配方设计难点。性能数据包括润湿性、流平性、防污性、耐腐蚀性及耐久性。同时评估对光泽度、颜色和附着力的影响。研究显示在环氧底漆中加入短链含氟表面活性剂, 其润湿性、流平性、抗腐蚀和抗粘连性都显著提升, 却不会对面漆的光泽度、颜色和附着力带来任何负面影响。

Sustainable short-chain fluorosurfactant and fluororepellent (six or less fluorinated carbons) have been increasingly focused on in the coatings industry. This new technology delivers superior performance as well as an eco-friendly image because it cannot break down into PFOA or PFOS in the environment. This paper focuses on how short-chain fluorosurfactants can enhance the performance especially improving the surface defects of water-based industrial coating. It addresses the formulation design of a water-based epoxy primer and a two-component water-based polyurethane top-coat for general metal coating. Performance data includes wetting, levelling, stain- and corrosion-resistance, and durability. Impact on gloss, colour and adhesion will also be evaluated. This study revealed that the wetting, levelling, anti-corrosion and anti-tacky performance of epoxy primer were significantly improved without any negative effect on gloss, colour and adhesion of topcoat when adding short-chain fluorosurfactants.

论文 PAPER 4



Mr. Khoo Teng Hai 先生
路博润先进材料高性能涂料
(亚太区) 技术产品经理
Technical Product Manager,
Lubrizol Advanced Materials,
Performance Coatings, Asia Pacific

用于紫外光固化涂料的新一代高效消光剂 Next Generation High Efficient Matting Agents for UV Coatings

相比传统的涂料(水性、单组分或双组分系统), 辐射固化涂料在配方和固化方面均面对挑战。许多这些挑战都是由固化机理引起的, 哑光清漆配方对配方师而言更是一个艰巨的挑战。对于 100% 固体涂料, 要在以下几方面找到平衡并不容易: (a) 针对性合适粘度 (b) 目标光泽度及 (c) 所需涂膜性能 (如耐划痕性能、硬度、耐化学品性能等)。为了解决这些相互矛盾的需求, 意味着需要采用不同作用机理的消光剂。本文同时阐述另一种可实现所需平衡的消光机理。

Compared to conventional coatings (waterborne, 1-pack or 2-pack systems), the field of radiation curable coatings holds different challenges on the formulation and curing side. Many of these challenges are caused by the curing mechanism. Especially the formulation of matted clear coats can become an extremely tough challenge to the formulator. In case of 100% solid coatings, it can be complicated finding the balance between (a) acceptable viscosity for the targeted application method (b) targeted gloss level and (c) desired film properties (e.g., scratch resistance, hardness, chem. resistance, etc.). To meet these often conflicting requirements implies the need for matting agents that operate via a different mechanism. An alternative matting mechanism to achieve required balance will be outlined.

12月2日(星期二) Tuesday, December 2nd, 2014

主题论文 KEYNOTE PAPER 5

Dr. Guillaume Jaunky 博士

德国毕克化学公司研发技术总监
Technical Director Research & Development, BYK-Chemie, Germany



现代添加剂技术 — 面向未来的观点 Modern Additive Technology — a View into the Future

当今涂料技术正被不少技术和商业性挑战推动。除了可持续发展、节能减排和可再生资源引入等趋势外, “智能涂料”也备受关注。通过高度结构化的多功能聚合物架构, 创新添加剂技术实现了刺激响应型材料、自愈自修复涂料、自分层添加剂等产品的智能表面及介面性能。本文将综述最先进的添加剂技术及其在工业领域的应用实例, 同时讨论如何弥合理论与应用科学之间的差距。

Today's coatings technology is driven by a number of technical and commercial challenges. Beyond topics like sustainability, energy reduction and incorporation of renewable resources, "smart coatings" are of major interest. Innovative additive technologies, with their highly structured multifunctional polymer architectures, realize the smart surface and interfacial properties of stimuli-responsive materials, self-healing and self-replenishing coatings and self-stratifying additives. This paper will update sophisticated additive technologies including examples of industrial applications. Future perspectives bridging the gap between theory and applied science will also be discussed.

论文 PAPER 6



戴晔 博士 Dr. Dai Ye
美国空气产品公司首席化学师
Senior Principal Chemist,
Air Products, USA

新型超润湿表面活性剂在涂料的应用 New Superwetting Surfactants for Coatings Applications

在低表面能基材和受污染表面上应用水性涂料存在重大挑战, 尤其牵涉到应用材料的润湿性、流动性和流平性。使用可扩散和吸附在介面的表面活性剂可降低表面张力, 从而改善这些性能。新型低泡性有机/硅氧烷杂合超润湿表面活性剂已发展到可提供优异的相平衡、降低动态表面张力和改善难润湿表面的流动性和流平性, 如木材、塑料和脏污的金属表面。本文将介绍基材润湿性、流动性和流平性的重要性, 并重点阐述超润湿表面活性剂的优异性能。

Applying water-based coatings onto low energy substrates and contaminated surfaces present significant challenges, especially with wetting, flow and levelling of the applied material. To improve these properties, surfactants that diffuse to and adsorb at interfaces are used to reduce surface tension. New, low-foaming organic/siloxane hybrid superwetting surfactants have been developed to provide premium equilibrium and dynamic surface tension reduction as well as improved flow and levelling for difficult-to-wet surfaces like wood, plastics and dirty metal. The importance of substrate wetting, flow and levelling will be presented focusing on superior performance of superwetting surfactants.


**论文
PAPER 7**
增稠剂在优化涂料配方中的作用**The Role of Thickeners in Optimising Coatings Formulation**

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涂料助剂研发经理
Group Leader Research, BASF,
Germany

水性内墙装饰涂料包含许多相互作用的组分，以达到适合存储和应用施工的粘度。取决于配方和施工方法（刷涂或辊涂），合适的流变性可通过增稠剂的选择来实现。本文将说明如何通过选择合适增稠剂，以优化涂料的触变性、防流挂性、耐沾污性、颜色接受度及涂料稳定性等性能。同时讨论缔合型和碱溶胀增稠剂与典型配方中重要组分之间的相关性。

Waterborne interior decorative paints consist of many components that interact with each other providing a proper viscosity for storage and application. Suitable rheology is achieved through the thickener selection which depends on the formulation and application methods (brush or roller). This paper will illustrate how selecting the right thickeners is of paramount importance to achieve optimised coatings performance, thixotropy, sagging, stain resistance, colour acceptance and paint stability. The correlation between associative and alkali swellable thickeners with most important components in model formulations will be discussed.


**论文
PAPER 8**
干膜杀菌剂的发展**Developments in Dry Film Biocides**

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澳大利亚索尔集团
亚太区区域技术经理
Regional Technical Manager –
Asia-Pacific, Thor Group, Australia

对于干膜杀菌剂，目前有了更高的要求 and 期望。由于雨水集聚的积极推进，改变了控制使用生物杀灭剂的规定。针对涂料的耐久性 & 抗菌性的要求正逐渐成为常态，且不仅局限于一些专门产品。还有就是为达到 Ecobels 所设定的特定限制规范的需求。本文将介绍控制使用干膜杀菌剂的法规，以及针对含有干膜杀菌剂涂料的标志限制，并讨论提高干膜杀菌剂的性能及减少对环境影响的技术进展。

There are now greater demands and expectations being placed on dry film biocides. Regulations controlling the use of biocides have changed, the collection of rain water is actively promoted, paints are being guaranteed to last much longer and antimicrobial claims are becoming the norm rather than restricted to specialised products. There is also a greater demand for paints to meet specifications set by Ecobels with their particular restrictions. This paper looks at regulations controlling the use of film biocides and any labelling restrictions that may be imposed on paints containing them. Technologies developed to improve the performance of film biocides and reduce environmental impact will be discussed.


**论文
PAPER 9**
用于工业涂料色浆的新型高性能研磨介质**New High Performance Grinding Medium for Industrial Coatings Colourants**

章志源 先生 Mr. Johnny Zhang
温新树脂公司(总部:比利时)
亚太区技术开发经理
Technical Development Manager,
Asia-Pacific, Allnex (HQ Belgium)

涂料体系愈来愈多，操作和劳动力成本也不断增加，推动着工业涂料朝现代调色系统转化，因此有必要配合改变生产过程。本文将介绍一种用于工业涂料中，可有效地分散、稳定及运输有机和无机颜料的高聚合、多功能的“通用”颜料研磨介质。该介质显现出广泛的相容性，可实行具成本效益性的高负载色浆生产，同时让涂料生产商开发经济高效的调色系统，生产应用于多种非水性工业涂料中主要粘合树脂体系的着色剂。

The ever-increasing number of paint systems together with increased operation and labour costs are driving industrial coatings to switch to modern tinting systems, necessitating significant changes in production process. A high polymeric, multi-functional 'universal' pigment grinding medium designed to efficiently disperse, stabilise and transport organic and inorganic pigments in industrial coatings will be introduced. It shows broad compatibility and enables cost efficient production of highly loaded pigment pastes, enabling paintmakers to develop economical and high performing tint systems which will colour the major binder resin systems used in a variety of non-aqueous industrial coatings applications.


**论文
PAPER 10**
多功能性感温高分子形状记忆复合物**Multi-functional Thermochromic Polymeric Shape Memory Composites**

林璘 教授 Prof. Long Lin
英国利兹大学色彩及聚合物化学系主任
Head of the Department of Colour and
Polymer Chemistry, University of Leeds, UK

本文报导了具有温度感应功能的新形状记忆聚合物(SMP)复合材料的设计、制造和表征。这种复合材料通过引入热致变色粒子作为添加剂制备而成。针对这种添加剂对于合成制备的形状记忆聚合物复合材料的热机械性能和热响应形状记忆性能的影响进行了表征及解释。结果发现，复合材料暴露于70℃温度以上时，通过热学和电动方法记录发现具有重复可逆性的明显颜色变化。同时还发现，该复合材料的颜色与形状记忆聚合物的机械状态不相关。这种作用可以用于监控形状记忆聚合物固定/变形温度的起点。此外，热致变色添加剂和形状记忆聚合物的结合可以显著地提高复合材料的热机械强度、红外辐射吸收和温度分布等性能，可在高附加值功能涂料中实现应用。

The design, fabrication and characterisation of novel shape memory polymer (SMP) composites having a temperature sensing capability are reported. Such composites had been prepared by incorporating thermochromic particles as an additive. The effects of such an additive on the thermomechanical and thermally responsive shape memory (SME) properties of the resulting SMP composites had been characterised and interpreted. It was found that exposure of the composites to temperatures above 70 °C led to a pronounced change of their colour that was recorded by the thermal and electrical actuation approaches was reproducibly reversible. It was also found that the colour of the composites was independent of the mechanical state of the SMP. Such effects enabled monitoring of the onset of the set/release temperature of the SMP matrix. Furthermore, the combination of thermochromic additive and the SMP resulted in significantly improved thermomechanical strength, absorption of infrared radiation and the temperature distribution of the SMP composites, which may find applications in high value-added functional coatings.



**吕海宝 教授
Prof. Haibo Lu**



**姚永涛 博士
Dr. Yongtao Yao**

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12月1-2日 • DEC 1-2

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会议地点

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参会费用

标准费用: 人民币 ¥1,800.00 (另加6%增值税) / 美元 \$ 280.00
中国国际涂料展参展商: 人民币 ¥1,600.00 (另加6%增值税) / 美元 \$250.00

提前报名优惠: 2014年11月21日前报名并付费: 95折

团体优惠: 凡同一公司/单位一次登记3位代表或以上, 可获9折优惠。

费用包括: 茶点、午餐(第二天)、会议论文集及光碟、与会代表名单、
「第十九届中国国际涂料展」贵宾入场证及会刊。

所有会议资料将于2014年12月1日在会场登记处派发。

报名程序

请填写登记表格后以传真交回主办单位, 或直接在网上传送
www.chinacoatcongress.net

取消登记

如在2014年9月30日前取消登记, 主办单位将会退回50%所缴付费用。所有来信通知以邮戳为准。代表如在2014年9月30日后通知主办单位, 或在没有通知主办单位的情况下缺席, 将不获退回任何费用。代表名额可由他人代替, 所有取消登记或更改代表必须以书面通知主办单位, 主办单位将会以书面通知确认。所有退款在扣除所有必须的行政费用后, 将于会议结束后十四天退回。

论文集

论文集将以光碟形式出售, 定价为美元\$60 (人民币¥360)。展会期间, 请到大会赞助刊物——《中国涂料工业》杂志(CCJ)的展台购买。展会结束后请与香港办事处联系。
主办单位保留更改主讲题目及讲者的权利, 毋须预先通知。

Conference Venue

Shangri-la Hotel Guangzhou
No. 1 Hui Zhan Dong Road, Haizhu District, Guangzhou, Guangdong Province, P.R. China

Registration Fees

Standard Fee: US\$ 280.00
Direct CHINACOAT Exhibitors: US\$ 250.00
Early Bird Discount: Register and pay before Nov 21, 2014: less 5%

Volume Discount:

Register 3 or more delegates from the same company/organization: less 10%.
Fees include: Coffee breaks, Luncheon (the second day), Conference Proceedings (hard copy and CD), List of Conference delegates, VIP pass and Show Directory for CHINACOAT2014 Exhibition.

All Conference Materials will be ready for collection on December 1, 2014 at the Reception Counter.

Registration Procedures

Please fax the completed Registration Form to the Organiser, or you may register online at www.chinacoatcongress.net

Cancellations

50% of the Conference fee will be refunded if the acknowledgement of cancellation is received by **not later than September 30, 2014**. In all cases, the date of postmark shall apply. The complete Conference fees will be forfeited if delegates cancel their participation **after September 30, 2014** or fail to attend without notifying the Organiser. Substitutions of nominated delegates may be made at any time. All cancellations and/or changes must be notified in writing and will be confirmed by the Organiser. Any fees to be refunded will not be paid until 14 days after the end of the Conference and deducting the necessary administration costs.

Conference Proceedings

Copies of the Conference proceedings (in CD format) will be available for sale at US\$60 per set. To purchase, simply visit the booth of "China Coatings Journal" (CCJ) the Official Publication of CHINACOAT during the exhibition. To purchase after the exhibition, please contact our Hong Kong office.

The Organiser reserves the rights to change the programme, paper(s) and/or speakers at any time and without prior notice.

查询 ENQUIRIES

海外、香港及台湾地区 OVERSEAS, HONG KONG & TAIWAN REGIONS | 中贸推广—艾特怡国际有限公司 Sinostar-ITE Int'l Ltd.

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