

## Preface

This book derives from presentations made at an International one-day conference organised by the Speciality Chemicals Sector of the Industrial Division of the Royal Society of Chemistry, and by the Paint Research Association, on 4<sup>th</sup> September 2002 held at The Heath, Runcorn, Cheshire, UK. The conference follows on four years after the previous RSC conference on this topic and updates on this advancing field with the recent developments. It is the fourth conference in the series, the previous conferences being published as

*Advances in Additives for Water-based Coatings* published in 1999 (RSC Special Publication No 243, ISBN 0-85404-754-9)

*Waterborne Coatings and Additives* published in 1995 (RSC Special Publication No 165, ISBN 0-85404-740-9)

*Additives for Water-based Coatings* published in 1989 (RSC Special Publication No 76, ISBN 0-85186-607-7)

It would not be possible in a one-day conference to cover the whole field of additives for water-borne coatings. The approach taken, both in the meeting programme and in the edited papers in this publication, was to seek two plenary lectures from world authorities to overview the field and its direction, and to select key additives currently employed for in-depth treatment of their use, behaviour and scope by expert practitioners in those additives. Particular emphasis throughout is placed on the practical aspects of the subject, theoretical considerations only being introduced where essential in order to more fully understand the topic. As the meeting title implied, the programme was essentially a 'look forward' rather than a 'review' of existing practice. The developments discussed are considered, most importantly, in the light of increasingly stringent environmental requirements and a background of regularly changing legislation.

The plenary papers comprise Chapters 1 and 5. In Chapter 1, Roger Brown [Akzo Nobel Decorative Coatings] describes how the use of certain additives, which otherwise on cost and general property grounds one would like to avoid, become essential to impart the desired properties to the coating system. In Chapter 5, Jon Graystone [Paint Research Association] presents a means of how, by assessing the likely performance of an additive in a coating using a number of 'Additive Rules', optimisation of properties may be achieved.

Specialist papers on particular additive types comprise the remainder of the publication. Two chapters are devoted to Rheological additives, reflecting the importance of rheology control in water-borne coatings. In Chapter 3, Dirk Kruythoff [Hercules BV] reviews how the use of Cellulosic rheology additives has developed in recent years to overcome shortcomings in these materials and to enhance their performance. In Chapter 6, Isabelle Mussard [Rohm and Haas] covers recent advances in the field of Associative Thickeners which attempt to broaden the range of rheological control these polymers can impart.

One chapter each is devoted to Biocides, Dispersants, Matting Agents, Antifoams and Surface Active Additives. In Chapter 2, Scott Betts [Thor Chemicals] considers how a wide range of water-based coatings are susceptible to attack, leading to, for example 'In-Can' and 'Dry Film' damage by a number of different organisms, and explores the range of Biocides which can be used to address these issues. Ian Maxwell [Avecia] in Chapter 4 addresses Dispersants, and shows how improved additive design can help formulators address difficult water-borne coatings formulation requirements in respect of increased black jetness, transparent iron oxide formulations and flake alignment at higher solids contents.

Chapter 7 from Hans-Dieter Christian [Degussa AG] emphasises that surface appearance can be an important requirement in water-based coatings, for instance, in the continuing trend, particularly in the automotive and furniture industries, for matt surfaces. This has led to a new generation of untreated silicas to bring about new standards in matting efficiency. In the penultimate Chapter 8, Hans-Guenther Schulte [Cognis] considers the subject of Antifoams. He starts by describing the mechanisms of foam generation and control in some detail and then goes on to show how a range of de-foamers including mineral oils, emulsions, powders and silicone-based types may be employed. The various methods of assessing the performance of a de-foamer are described. Finally, in Chapter 9, Donna Perry [Dow Corning] indicates how surface active agents, most particularly silicones, are used to reduce the surface energy of a coating to which they are added, in order to achieve certain surface properties including desired flow, levelling and wetting performance.

The editors hope that this publication will prove to be a valuable addition to current literature on this topic, suitable for both readers relatively new to the field as well as experienced workers in the coatings industry.

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