

in bringing the two groups of scientists together, without any joint work being reported, their book admirably shows areas for future collaboration and they are to be congratulated on that achievement.

Finally, the book owes its origin to the reputation of the reactivity of solids research group at the Université de Bourgogne, Dijon. This high standing is due to Pierre Barret's thirty year reign as Professor of General Chemistry. Accordingly, this book is dedicated to him, marking his retirement, and opens with a short and affectionate tribute to him.

The book reaches the high standard of presentation that one comes to expect from these publishers even though it is prepared from camera-ready copy supplied by the authors, and consequently the papers vary in typeface and some contain typographical errors. This high standard is attributable to the excellent and clear instructions for authors, to the quality of which I, as a contributor, can testify.

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9th international conference on alkali–aggregate reaction in concrete

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The two-volume proceedings of the 9th conference on alkali–aggregate reaction (AAR) contains 128 papers arranged in alphabetical order of the first named author. At the conference itself the papers were presented in the following sequence of sessions: reactive aggregates; undulatory extinction of quartz; testing aggregates by standard methods; testing concrete; evaluation of structural effects; damaged structures, evaluation, management, repair; chemistry and mechanisms of reaction; review of guidance and specification and regional reviews; and cement replacements and additives. Most of the papers discuss alkali–silica reaction (ASR) data rather than alkali–carbonate or other forms of reaction.

In the absence of a better way to organize the large amount of the material presented, the above structure serves its purpose well. Most of the papers are well prepared and documented. As one would expect, however, only a small fraction of the given data represents truly novel information. It is a pity that some of the papers were placed in the wrong sessions, i.e. do not discuss data relevant to the session topic. An example, is the session on the chemistry and mechanisms of reaction, in which several papers discuss only limited chemistry and do not present any mechanistic interpretations.

Among the most important topics covered in the conference papers is the issue of proper testing of potential aggregate reactivity and of the alkali–silica reaction in concrete. A variety of modified and novel techniques are proposed, few of them covering the whole range of

environments to which concrete is exposed. Nevertheless *in toto* the presented data will certainly advance the field and contribute to the development of better test methods.

Another interesting topic discussed at the conference at length is the issue of concurrent appearance of alkali–silica gel and ettringite in cracked concrete, mostly detectable in steam-cured concrete products. The majority view leans towards ASR being the primary or main culprit, although some propose that formation of secondary or delayed ettringite is the reason for crack development.

Inadequate attention was given to the topic of ASR in field versus laboratory concrete, to the interpretation of research data *vis-à-vis* concrete exposed to the environment. How much ASR gel and what degree of cracking of concrete, and under what structural and environmental conditions, should be considered deleterious? How can one transfer the extensive scientific knowledge available to practice? What are the mechanisms of stopping ASR in an already deteriorating structure? What are the economic/ecological implications of AAR and how should they be predicted in advance of construction? These and other topics will need to be discussed at length at the next conference on AAR.

Overall the Concrete Society and the organizers of the Conference should be complimented for a timely and quality publication of the presented papers.

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