Editorial

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This summer, all over Europe, record temperatures have been measured. From my own country, the Netherlands, the people working at the various meteorology organisations never imagined that the temperature in more than half the country would reach above 40°C. And yet it did! Another example that the climate is changing.

In these changing circumstances, everybody should consider how our actions affect our planet. For me, as a materials scientist, that includes the world of construction materials. As you can read in the article by Evangelista *et al.* (2019), the construction sector accounts for almost 40% of the world's energy consumption, 30% of the raw materials used, 25% of solid waste production and 33% of related greenhouse gas emissions. Focusing specifically on aggregates, around the year of 2005 the average consumption was about 8000 kg per person per year in the USA and in Europe. Hence, construction materials count! You can read in this issue about the successful steps Evangelista *et al.* took in replacing natural fine aggregates with recycled fine aggregates.

As the climate changes, temperatures are expected to rise in general, but also reach more extreme values. This means producing concrete more often in hot weather conditions. A perfect place to learn to cope with such circumstances from experience are the outdoor summer conditions in Abu Dhabi (25–40°C). You can read the research from Al-Khatib and Al-Martini (2019) in which they develop a neural network model to help them keep self-consolidating concrete within specifications for prolonged mixing time under hot weather conditions.

More hot weather issues are addressed in the article of Chen *et al.* (2019), in which they investigate a phenomenon called 'elephant skin' formation. This is a condition found in practice in which a rough texture and occasional cracks on the exposed surface of concrete (usually ultra-high-performance concrete) appear within hours after concrete placement. It is not so easy to take a phenomenon from the field back to the lab for investigation; however, with a smart research setup, insight in

the mechanism and direction for solution are obtained and described in their article. The baseline of their findings: keep the water in!

Keeping the water out is the topic of the article of Hickman and Macmillan (2019). Rather than performing their own experiments, they have taken a different approach in that they have reviewed articles that have tested waterproofing additives for basement concrete. It is interesting to read how many comments they have on the research that has been performed. I am curious how this may change the opinion of our readers with regards to the different type of products they describe.

New insights are also what Yang *et al.* (2019) found in their research, described in the last article of this issue. Using Faraday's law to determine the amount of current for accelerated corrosion at the onset of their experiments, they demonstrate that the amount of corrosion occurring in this way is not following Faraday's law. You can read their article to see how the equations need to be modified for improved interpretation of the results.

As concrete remains a very important part of our construction materials, this issue hopefully provides you again with new and interesting information on the topics briefly outlined above. However, the journal is about *all* construction materials, including but not limited to steel, asphalt and wood. I would therefore like to invite our readers to send in papers over the entire range of construction materials with your latest discoveries and insights to be considered for publication. I am already looking forward to the next series of hot topics on a range of construction materials!

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