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New Challenges in Thin-Film Nanocomposite Membranes

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Message from the Guest Editor

Today, thin-film composite (TFC) membranes have become an important technique in producing and supplying clean water from different resources such as sea water, brackish water or contaminated fresh water. However, the separation active layer of these types of membranes, typically consisting of highly cross-linked polyamide prepared via interfacial polymerization, is susceptible to fouling and degradation by chlorine. TFC membranes show a relatively low productivity and trade-off between water permeability and selectivity. To overcome these drawbacks, a broad variety of nanomaterials, either inorganic, metallic, or organic, have encouraged research activity in recent decades.

The focus of this Special Edition of Coatings is set on:

- Stable nanocomposite TFC membranes preparation.
- The nanoparticles effect on membranes such as water permeability, selectivity and fouling behavior.
- The description of the mechanism of action of nanoparticles.
- Theoretical aspects and simulation and water/salt transport in nanoparticle-modified TFC membranes.

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Message from the Editorial Board

Now more than ever, research is asked to deliver knowledge and technologies to solve the major challenges faced by our society. The development of new materials and devices for (without the ambition to be exhaustive) energy, health and food technology, together with the need for establishing processes that reduce the impact on critical resources and the environment, is indeed in the spotlight of most contemporary research. Surface science and engineering play a key role in this regard, with an incredible potential in delivering new and deep scientific understanding and technical solutions essential to solve most of the major societal challenges.

Coatings is a well-established, peerreviewed, online journal dedicated to the vibrant field of surface science and engineering. Coatings publishes original research articles that report cutting-edge results and review papers that make the point on the hottest research topics.

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