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Editorial

Theme: Modeling and Simulations of Drug Product Manufacturing Unit Operations
Guest Editors: Alexander Russell and Maxx Capece

Pharmaceutical Process Modeling

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The ultimate goal of the pharmaceutical industry has always been bringing safe and efficacious drug therapies to market as soon as possible and maintaining its robust supply for patients. Owing to key progress in the related sciences and engineering, the pace and innovative pathways built to achieve this goal continue to advance. Nevertheless, material and manufacturing costs are still significant for solving complex technical challenges during such fast-tracked science-based development as well as post-commercialization improvements. Process models that accurately incorporate the necessary detail of the underpinning science(s) are key tools to ensure that development and investigational studies are targeted, rapid, and effective. It is our pleasure, therefore, to present this special issue on the theme of Pharmaceutical process modeling.

Part I of the issue presents contributions that address multiple unit operations, from a holistic product and process perspective. Parts II and III present contributions that describe advances in modeling approaches for drug substance and drug product processes, respectively. Overall, these contributions highlight the remarkable capabilities of the modeling approaches and tools used to impact the development of drug products. The issue is multi-disciplinary in pharmaceutical sciences and engineering, with contributions originating around the globe from academia, industry, and regulatory agency.

We thank the authors for their contributions and the reviewers for their comments that have helped the scientific quality of these publications. We thank the Editor-in-Chief for making this issue possible. Considering the unprecedented way all have been impacted by COVID-19, we can't thank enough everyone involved with this special issue.

We hope this compilation helps the readers to advance their manufacturing processes via modeling, and move a step closer towards true process control with reduction in material and manufacturing costs.

With Regards,
Guest Editors

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