

POLYMER SCIENCE IN THE AGE OF AI

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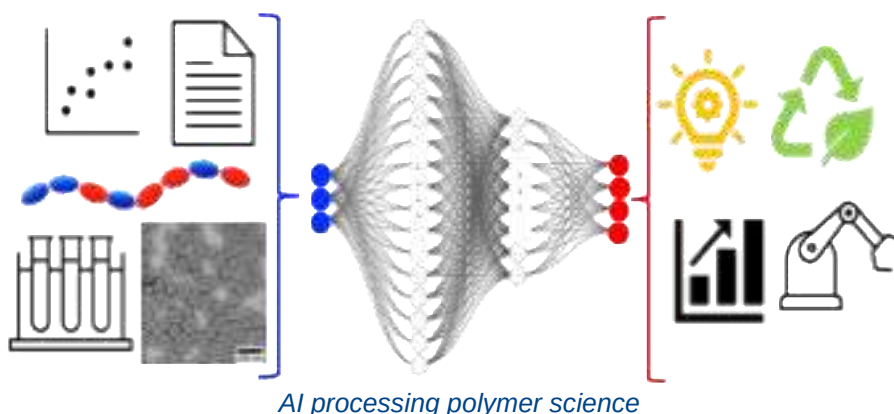
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Mots-clés : artificial intelligence, machine learning, polymer science, prediction, automation.

Résumé :

Artificial intelligence (AI) and machine learning (ML) are transforming polymer science by enabling new strategies for modeling, prediction, and automation.¹ This presentation will begin with an accessible introduction to the fundamental concepts of AI and ML, highlighting their potential to accelerate research and innovation in the field. We will then showcase two recent case studies: (i) the use of deep neural networks to predict self-assembly morphologies in polymerization-induced self-assembly (PISA),² and (ii) an AI-powered framework for the automated detection and sizing of polymer nanostructures in microscopy images.³

Beyond these applications, we will also discuss key challenges facing the integration of AI in polymer research, including data quality, standardization, limited dataset availability, and the need for interdisciplinary collaboration. These considerations are critical for building robust, generalizable models and for realizing the full potential of AI-driven discovery in polymer science.



Références :

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