AI and materials — advancing the frontiers of science and technology

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This is an era when technological advancements are accelerating at an unparalleled speed, especially with the rise of artificial intelligence (AI) impacting various disciplines. Meanwhile, conventional materials science faces limitations, due to its reliance on human discovery of more and more complicated theories and experimental verifications, which restrict the efficiency of current research and hinder innovative developments of materials with targeted functionalities. Therefore, the integration of materials science and AI offers tremendous potential for groundbreaking innovations. AI & Materials, an online and peer-reviewed multidisciplinary academic journal, is committed to exploring, promoting and advancing this exciting integration.

AI & Materials is dedicated to publishing peer-reviewed research articles that showcase the latest innovations at the intersection of AI and materials science. We are committed to attracting works that not only advance the frontiers of these fields, but also stimulate interdisciplinary progresses. Our journal welcomes contributions that explore novel AI algorithms with potential applications in materials science, computer-aided design of new materials, and the utilization of AI for scientific techniques, particularly in the materials domain.

The scope of AI & Materials encompasses a diverse range of topics that reflect the dynamic interplay between AI and materials science:

- Novel AI Algorithms for Materials Science: Research that introduces groundbreaking AI methodologies with direct implications for materials science, driving innovation and new applications.
- Computer-Aided Design of Novel Materials: Papers that leverage AI for the design and prediction of new materials are central to our mission, showcasing the power of computational techniques in material discovery.
- AI in Scientific Techniques for Materials Science: We aim to publish works that highlight how AI enhances scientific methods and techniques within the realm of materials science.

- Digital Twin Technology with AI for the Materials Industry: Research on digital twins, powered by AI, which revolutionize the materials industry through advanced simulation and modeling, is highly encouraged.
- AI-Boosted Modeling Techniques for Manufacturing Processes: We welcome studies on AI-driven modeling techniques that optimize manufacturing processes and systems, illustrating the impact of AI on materials industrial efficiency and innovation.
- Materials Theory Assisted by AI Technology: Papers that demonstrate how AI can assist in developing and refining materials theory are vital to our vision.
- High-Performance Computing (HPC) for AI and Materials: Research utilizing HPC for advanced modeling, simulation, and analysis in the context of AI and materials science is of great interest.

AI & Materials transcends the conventional journal format, emerging as a dynamic nexus where interdisciplinary collaboration converges to redefine the frontiers of materials innovation. This collective endeavor harnesses artificial intelligence's transformative potential to catalyze breakthrough discoveries that were once constrained by traditional research paradigms. The editorial team of *AI & Materials*, composed of leading experts and passionate researchers from the fields of materials science and artificial intelligence across various countries, is dedicated to driving transformative advancements that will define the future of technology and materials science. We are enthusiastic about fostering an environment that encourages innovation and interdisciplinary collaboration.

Through the collective brilliance of global thought leaders, we can unlock new potentials and pave the way for a future where AI and materials science converge to create unprecedented solutions for the challenges of tomorrow. We invite researchers, scientists, and innovators to join us in this exciting journey. Share your groundbreaking works with global audience by submitting your research to *AI & Materials*. Stay informed with the latest advancements by exploring our published articles.

Welcome to *AI & Materials*, we look forward to sharing this journey with our readers and contributors, driving the development of this dynamic field together.

Finally, we would like to thank our production team and of course all the Associate Editors, Editorial Board Members and Reviewers for their support in processing and reviewing contributed papers of the journal.