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**Proceedings of the First International Workshop on**

## **Semantic Materials Science**

**Harnessing the Power of Semantic Web Technologies in Materials Science**

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# Preface

Advanced technological solutions play a vital role in leveraging the potential of data and driving innovative research. However, the compatibility issues arising from different formats and structures of scientific data hinder progress in data generation, organization, storage, and sharing. To address these challenges, interoperability and efficient data access and analysis automation are crucial. The Semantic Web emerges as a powerful solution to overcome these obstacles.

Expanding and adapting Semantic Web technologies to the Materials Science domain can significantly enhance research outcomes by enabling the uniform consideration, integration, and analysis of heterogeneous data from diverse sources and formats. Implementing these technologies can improve the traceability and reproducibility of scientific procedures, experiments, and simulations. It also facilitates automatable data management solutions and empowers researchers to answer scientific inquiries using semantic queries. Moreover, machine learning methods can benefit from enhanced data completeness and coherence.

The primary objective of this workshop was to gather professionals in Semantic Web and in Materials Science and Engineering to show the recent advances in the use of Semantic Web technologies for Materials Science and Engineering, as well as provide a platform for discussing issues, finding collaboration opportunities and developing a community for this interdisciplinary field.

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August 2024

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