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Editorial Note

Over the past year, the continuous engagement of academia and industry, in a growing and expanding agenda, has led to fascinating findings that are leading to large demonstrations where the use of ammonia is being proved. From small fuel cells to large power stations, ammonia fueling is becoming a reality that keeps expanding towards its deserved place in the energy mix.

Particular to 2023/24, there have been large progresses in the development of internal combustion engines for marine applications, increasing projects for the production of green ammonia, and the onset of new markets within gas turbines, thermal applications and fuel cells. Far-East countries such as Japan, South Korea, Singapore and China have engaged in ambitious ammonia-based programs that aim to replace fossil consumption with the use of net zero fuel sources, hence expanding ammonia's prospects within this economically thriving region. It is also of interest to know that economies such as the U.S.A. and various European countries such as the U.K., Germany, Norway and Sweden, amongst many others, are betting to the use of ammonia for hydrogen storage. Deployment of novel cracking technologies have overtaken the news around the use of such a chemical, opening the opportunity to employ the latter as a medium to distribute hydrogen whilst storing energy during long periods of time. Not surprisingly, ports across the globe are assessing the storage of large quantities of ammonia for the delivery of hydrogen for its supply in natural gas grids, dedicated hydrogen pipelines, or even the use of "dirty" hydrogen streams (with nitrogen and traces of ammonia from cracking processes) for the support in the production of heat and power.

For that reason, it has come to our attention that further techno-economic analyses are needed to fully address the complexities of these projects, hence denoting the versatility of the use of ammonia for both energy and hydrogen distribution, whilst also emphasizing areas for further improvement to reduce process inefficiencies, with the potential of the deployment of systems that can use ammonia directly without the need of cracking. The big question now is "how much ammonia/hydrogen should we use for efficient, economically reliable deployment of net zero processes?", question that can only be answered by the robust analyses of both current and novel systems which need ambitious development programs such as those presented in this volume. We hope the reader will find the following pages inspiring to answer this and other questions around the use of ammonia as an energy vector.

We thank the Scientific Committee for their support in consolidating this journal. Finally, we also thank our 2nd Symposium Keynote Speakers, whose contributions have been summarized in the following pages for the purpose of giving readers a sense of the content of issue of JAE.

Sincerely yours,
Prof. Agustin Valera-Medina
Editor in Chief

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