Editor's Letter. Beyond vibration: recognizing the importance of shock and impact dynamics

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Engineering systems are rarely subjected to perfectly predictable conditions. Beyond continuous oscillations and periodic excitation, structures and materials must withstand sudden impacts, transient forces, and rapidly changing dynamic loads. Understanding these responses is fundamental to improving the safety, reliability, and performance of modern engineering systems.

Although shock and vibration are closely related, they present different scientific challenges. While vibration research often investigates oscillatory motion and its control, shock dynamics focuses on the response of systems to sudden energy transfer and short-duration loading. In practice, these phenomena frequently interact, making their combined investigation particularly important.

1. Research that shapes the journal

Scientific journals must evolve alongside the research communities they serve.

At the *Journal of Vibroengineering*, we have observed increasing interest among submitting authors in problems involving impact dynamics, shock loading, energy dissipation, and transient structural responses.

Recent contributions illustrate the diversity of these investigations.

For example, Xu and colleagues, in their study *Strain-rate effects and energy dissipation of frozen rocks under dynamic impact loading* (2026), investigated the mechanical behavior of frozen rock subjected to dynamic impact. Their work demonstrates the importance of understanding how materials respond to rapid loading and dissipate energy under different conditions.

Another contribution, *The airflow behavior of light particulate materials during free fall and their impact dynamics on screening surfaces* (2026), addresses the interaction between particulate materials and industrial screening systems, illustrating how impact dynamics extends into practical manufacturing and material-handling applications.

These studies represent different engineering problems, yet they share a common scientific challenge: understanding the response of materials and mechanical systems to dynamic forces that cannot always be described through conventional vibration analysis alone.

2. Introducing Shock and Vibration

In recognition of this research activity, we are introducing **Shock and Vibration** as a dedicated subject section within the *Journal of Vibroengineering* and *Vibroengineering Procedia*.

The section provides a more clearly defined home for research investigating shock and impact phenomena and their interactions with mechanical and structural vibrations.

We particularly welcome contributions addressing impact dynamics, transient structural response, shock-wave propagation in solids, dynamic material behavior, energy absorption, shock isolation, and the modeling and experimental investigation of systems subjected to sudden loading.

The section is intended to connect researchers across mechanical engineering, structural dynamics, materials science, transportation engineering, and related disciplines.

Importantly, this development does not represent a departure from the journals established scientific focus. Rather, it acknowledges an area of research that has long been connected to vibration engineering and deserves clearer recognition within our publications.

3. Looking ahead

Advances in experimental measurement, computational mechanics, and numerical simulation continue to expand our ability to investigate complex dynamic phenomena.

At the same time, engineering applications increasingly demand solutions capable of accounting for both sustained vibrations and transient loading events.

Bringing these perspectives together can support a more comprehensive understanding of dynamic behavior and contribute to the development of more resilient engineering systems.

Our responsibility as editors is not simply to define the boundaries of a journal, but to recognize meaningful scientific developments and provide an appropriate platform for their discussion.

The introduction of *Shock and Vibration* reflects this responsibility.

We invite researchers working in shock, impact, and vibration dynamics to contribute their findings and participate in the continuing development of this field.

References

[1] Y. Xu et al., "Strain-rate effects and energy dissipation of frozen rocks under dynamic impact loading," *Journal of Vibroengineering*, Oct. 2026, https://doi.org/10.21595/jve.2026.26778

[2] Y. Wang, J. Chang, and X. Liu, "The airflow behavior of light particulate materials during free fall and their impact dynamics on screening surfaces," *Journal of Vibroengineering*, Vol. 28, No. 1, pp. 1–16, Feb. 2026, https://doi.org/10.21595/jve.2026.25801



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