

FBK paper recognized among the most viewed articles in *Advanced Science*

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Ali Nawaz, FBK Center for Sensors & Devices, co-authors work on synaptic ion-gating vertical transistors for brain-inspired computing systems.

The paper [***“Advanced Neuromorphic Applications Enabled by Synaptic Ion-Gating Vertical Transistors”***](#), published in *Advanced Science* (Wiley, a leading peer-reviewed interdisciplinary journal covering materials science, chemistry, physics, and biomedical engineering), has been recognized as a [**Top Viewed Article 2025**](#), ranking among the **top 10% most-viewed papers** published by the journal in 2024.

The recognition is awarded by Wiley to articles that have attracted exceptional readership and engagement from the global scientific community during the first year after publication, highlighting the broad visibility and relevance of the research.

The paper was co-authored by **Ali Nawaz**, researcher at the [Center for Sensors and Devices](#) of Fondazione Bruno Kessler (FBK), together with **Leandro Mercês** (Illum School of Science, Brazilian Center for Research in Energy and Materials), **Letícia Mariê Minatogau Ferro** (Chemnitz University of Technology), and **Prashant Sonar** (Queensland University of Technology).



The review explores the latest advances in

synaptic ion-gating vertical transistors (IGVTs), an emerging technology for neuromorphic electronics. Inspired by the way biological synapses process and store information, these devices offer a promising route toward energy-efficient artificial intelligence hardware, with the potential to integrate sensing, memory, and computation within a single platform.

The authors examine recent developments in IGVT device architectures, operating principles, and applications, highlighting their potential for artificial sensory systems—including vision, touch, hearing, and taste—as well as next-generation brain-inspired computing. The paper also discusses key scientific challenges and future research directions needed to enable more efficient, multifunctional neuromorphic systems.

Being recognized as a **Top Viewed Article** reflects the strong international interest generated by the study and highlights the visibility of FBK's research in a rapidly evolving field at the intersection of advanced materials, electronics, and artificial intelligence.

The achievement further reinforces FBK's commitment to developing cutting-edge technologies for the next generation of intelligent computing systems through international scientific collaboration and high-impact research.

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