EDITORIAL

REVISTA MILITAR de CIÊNCIA e TECNOLOGIA

The twentieth and twenty-first centuries were profoundly shaped by armed conflicts that redefined borders, ideologies, and societies. World War I ushered in a new era of industrialized warfare, with millions killed and the collapse of empires such as the Austro-Hungarian and the Ottoman. Soon after, World War II became the largest conflict in history, involving almost the entire planet, resulting in the Holocaust, use of nuclear weapons and creation of the UN. During the so-called Cold War, conflicts such as the Korean War (1950-1953) and the Vietnam War (1955–1975) reflected the ideological dispute between the US and the USSR. In the Middle East, wars such as the Gulf War (1990–1991) and the ongoing conflicts involving Israel and Palestine have marked the geopolitical scene. In the 21st century, the Afghanistan War (2001–2021) and the Iraq War (2003–2011) were responses to 09/11, with lasting consequences. More recently, Russia's invasion of Ukraine in 2022 has reignited global tensions, reminding us that the echoes of war still resonate strongly in the contemporary world, but with a great differential: the use of new military doctrines and equipment never before imagined, such as drones. In other words, innovation, more than ever, is present in all theaters of operations of current conflicts. In a global scenario increasingly driven by data, accuracy and security, Brazil has been standing out on several fronts of applied research. The intersection of materials science, systems engineering, and artificial intelligence reveals a vibrant academic and technological ecosystem, committed to solutions ranging from the field of defense to oral health. This editorial proposes a reflection on seven studies that illustrate this multifaceted advance strongly based on innovation.

The study on *The Impact of the Weighting of Semantic Resources for the Identification of Suspected Crimes in Social Networks* points to a new era in public security. By employing algorithms capable of interpreting linguistic and contextual nuances, researchers expand the ability to detect suspicious behavior in digital environments. This approach not only reinforces crime prevention, but also raises ethical debates about privacy and surveillance.

The research on *alumina ceramics doped with niobia and silica*, processed with functional gradient technique, represents a leap in materials engineering. The controlled densification and morphology of these ceramics promise applications in extreme environments, such as aerospace shields and components, where thermal and mechanical resistance are crucial.

In the field of defense and navigation, *azimuth estimation from multiple fixed beamformings in antenna-array radar systems* offers significant advances. This technique allows greater accuracy in locating targets, even in scenarios of interference or low visibility, reinforcing national technological sovereignty.

The *review of materials for stand-alone ballistic plates*, according to the Joint Operational Requirements of the Ministry of Defense, shows the continuous effort to align scientific research with strategic demands. The search for resistant and economically viable lightweight materials is essential to ensure effective protection without compromising mobility.

Evaluation of the mechanical properties of AA 5052 and AA 5050C aluminum alloys in laminated sheets demonstrates the potential of these alloys for structural applications. With their combination of lightness and strength, these materials are ideal for industries such as transportation, construction, and defense.

The innovation also appears in the creation of *aramid tissue compounds infused with polyethylene glycol and hematite nanoparticles*. Along with ballistic resistance, these materials also demonstrate microwave absorption properties, indicating potential applications in stealth shielding and protection against electromagnetic radiation.

Finally, the *influence of surface treatment on the primary stability of bone-integrating dental implants*, quantified with strain gauge, shows how precision engineering can transform dentistry. Improved bone integration and durability of implants has a direct impact on patients' quality of life.

In conclusion, these studies, although diverse in scope, converge on a common point: the commitment to scientific excellence and practical applicability. They reflect a country that invests in knowledge to protect, innovate and care. In times of global uncertainty, this is a bet worth gold. It is in this context that the Military Institute of Engineering is located, a bicentennial corporate university whose primary objective is to meet the needs of the Brazilian Army, but without leaving aside dual applications that may contribute as much as possible to civil society. *Revista Militar de Ciência e Tecnologia* (RMCT, publication *Open Access*), which is one of the regular publications of the Brazilian Army, plays a crucial role in the field of military science and technology. Its significance in this area is considered paramount.

We wish you an excellent reading!

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