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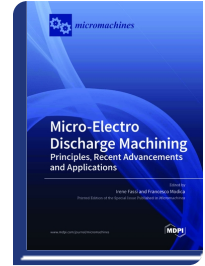
Special Issue Reprint

Micro-Electro Discharge Machining: Principles, Recent Advancements and Applications

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Edited by
Irene Fassi
Francesco Modica

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Micro electrical discharge machining (micro-EDM) is a thermo-electric and contactless process most suited for micro-manufacturing and high-precision machining, especially when difficult-to-cut materials, such as super alloys, composites, and electro conductive ceramics, are processed. Many industrial domains exploit this technology to fabricate highly demanding components, such as high-aspect-ratio micro holes for fuel injectors, high-precision molds, and biomedical parts.

Moreover, the continuous trend towards miniaturization and high precision functional components boosted the development of control strategies and optimization methodologies specifically suited to address the challenges in micro- and nano-scale fabrication.

This Special Issue showcases 12 research papers and a review article focusing on novel methodological developments on several aspects of micro electrical discharge machining: machinability studies of hard materials (TiNi shape memory alloys, Si_3N_4 -TiN ceramic composite, ZrB_2 -based ceramics reinforced with SiC fibers and whiskers, tungsten-cemented carbide, Ti-6Al-4V alloy, duplex stainless steel, and cubic boron nitride), process optimization adopting different dielectrics or electrodes, characterization of mechanical performance of processed surface, process analysis, and optimization via discharge pulse-type discrimination, hybrid processes, fabrication of molds for inflatable soft microactuators, and implementation of low-cost desktop micro-EDM system.



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