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Wire electrochemical micromachining of metallic glass using a carbon nanotube fiber electrode

Lingchao Meng, Yongbin Zeng, Xiaolong Fang, Di Zhu



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1 Wire electrochemical micromachining of metallic glass using 2 a carbon nanotube fiber electrode

3 Lingchao Meng ^{a,b}, Yongbin Zeng ^{a,b*}, Xiaolong Fang ^{a,b}, Di Zhu ^{a,b}

4 ^a College of Mechanical and Electrical Engineering, Nanjing University of
5 Aeronautics and Astronautics, Nanjing 210016, China

6 ^b Jiangsu Key Laboratory of Precision and Micro-Manufacturing Technology, Nanjing
7 210016, China

8 (*Correspondence: Yongbin Zeng, College of Mechanical and Electrical Engineering,
9 Nanjing University of Aeronautics & Astronautics, P.O. Box 1005, 29 Yudao St.,
10 Nanjing, 210016, China; E-mail: binyz@nuaa.edu.cn)

11 **Abstract:** Metallic glasses are promising materials for realizing high-performance
12 micro devices in micro-electromechanical systems (MEMS) owing to their excellent
13 functional and structural characteristics. A significant limitation to their application is
14 the challenge of shaping them on a microscale. A technique of wire electrochemical
15 micromachining (WECMM) with a carbon nanotube fiber (CNF) as tool electrode is
16 proposed for microstructure fabrication of metallic glass. WECMM is a type of
17 electrochemical micromachining (ECMM) that is increasingly recognized as a
18 flexible and effective technology to fabricate complex-shaped micro components.
19 Taking the example of a Ni-based metallic glass, Ni₇₂Cr₁₉Si₇B₂, the polarization and
20 fabrication characteristics in dilute acid electrolytes are investigated. As the
21 machining gap is very small in WECMM, efficient mass transport is extremely

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