非导电超硬磨料砂轮电火花放电修整技术 Electrical Discharge Truing/Dressing Technology of Non-electrical Super-abrasive Grinding Wheels

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关键词： 砂轮 非导电 超硬磨料 放电 修整

摘 要： 提出借助辅助放电材料对非导电超硬磨料砂轮进行放电修整的方法，阐述了放电蚀除结合剂实现非导电超硬磨料砂轮修锐的基本原理。通过观察修锐前后树脂结合剂金刚石砂轮表面的微观形貌，分析了峰值电流和电流脉宽对砂轮修锐质量的影响。结果表明，利用辅助放电材料实现非导电砂轮放电修锐是可行的，峰值电流是影响脉冲放电能量和修整区域温度场的重要因素；适合树脂结合剂金刚石砂轮修锐的放电峰值电流不高于3 A。 A novel electrical discharge truing/dressing (EDD) technology which could dress non-electrical super-abrasive grinding wheels such as resin-bonded diamond wheel and vitrified CBN wheel by means of covering electrical material on the surface of wheel was proposed. The principle of removing non-electrical bond during MEDD process was illustrated. The resin-bonded diamond wheel topographies prior and after electrical discharge dressing were observed by VH-800 3-D digital microscope. The results of electrical discharge dressing under different discharge current (ie) and discharge duration (te) were compared. Experimental results indicate that the proposed EDD method is applicable to non-electrical bond wheels. In addition, discharge current has direct influence on the wheel surface topography and the performance of diamond grains. As well as, pulse duration has less influence on the wheel surface topography. The experimental results also reveal that the appropriative discharge current (ie) in dressing resin-bonded diamond wheel process is less than 3 A.

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