

Research on the electrostatic induction feeding ECM

The electrostatic induction feeding method is used for micro-electrochemical machining (micro-ECM) to improve the machining accuracy.

Principle of electrostatic induction feeding ECM

The electrostatic induction feeding method is shown in Fig. 1. The power supply is coupled with the tool electrode by a feeding capacitance, and current flows through the working gap only at the instance when the pulse voltage changes to high or low. Hence, the current pulse duration is nearly equal to the rise and fall time regardless of the pulse on-time of the pulse voltage as shown in Fig. 2. In addition, the high speed rotation of the tool electrode is possible due to the non-contact electric feeding

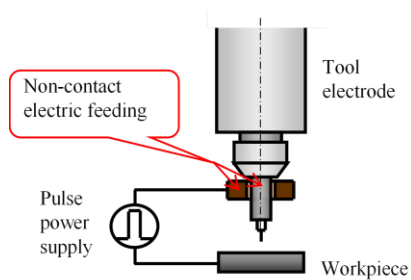


Fig. 1 Electrostatic induction feeding method

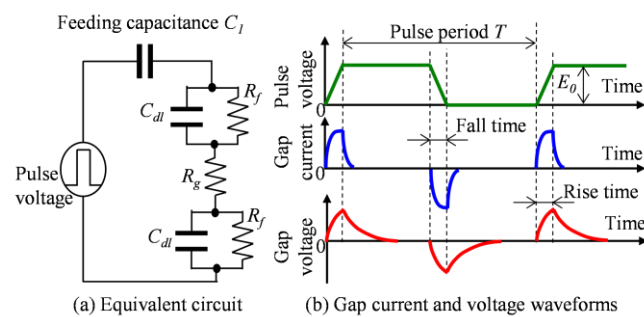


Fig. 2 Principle of electrostatic induction feeding ECM

feeding.

Application of electrostatic induction feeding ECM

Fig. 3 shows the deep micro-hole machined with the electrostatic induction feeding ECM, and Fig. 4 shows the high aspect ratio micro-rod.

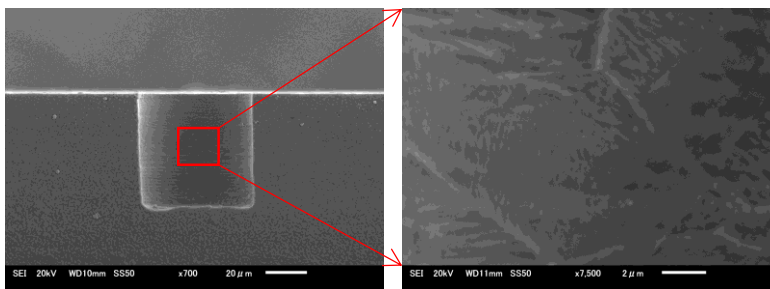


Fig. 3 Micro-hole machined with the electrostatic induction feeding ECM

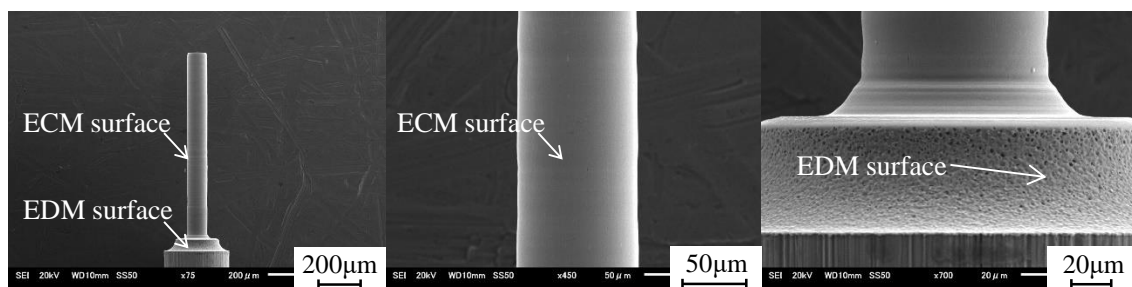


Fig. 4 Micro-rod machined with the electrostatic induction feeding ECM