

## **The influence of PZT excitation voltage on the testing sensitivity of electro-mechanical impedance method for coatings**

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### **Summary**

Abstract: Two kinds of plasma sprayed Cr<sub>2</sub>O<sub>3</sub> coating specimens are tested with electro-mechanical impedance (EMI) method. Quantitative investigation on the relationship between PZT excitation voltage and sensitivity of EMI method is performed in the frequency range of 100-110 kHz, with WK 6500B precision impedance analyzer and high excitation voltage electric impedance measurement system (HEVEIMS). A series of excitation voltage are designed from 0.01 to 15 V. Root mean square deviation (RMSD) of the PZT electric impedance signatures is used as an evaluation indicator. The results show that in the frequency range of 100-110 kHz, the RMSD values are not monotone with the increasing of excitation voltage. The influences of output voltage stability, noise, bonding condition and power consumption of PZT patch, etc are analyzed, respectively. This study provides a guiding reference for the selection of PZT excitation voltage for coating structure characterization with EMI method.

