36－61 Fabrication of metal oxide-diamond composite films by an advanced technique combining electrophoretic deposition and electrochemical dissolution of the anode

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Electrochemical co-deposition of diamond particles and refractory metal hydroxide films is conducted using a method combining electrophoretic deposition and anodic dissolution. Anodic corrosion of metal proceeds under the influence of iodide ions, and then metal ions are released to the solvent. Positively charged diamond particles are suspended in the solvent and electrophoretically deposited on the cathode surface at the same time as electrochemical deposition of the metal ions. As a result, diamond dispersed metal hydroxide film is produced. The diamond content of the film is easily controlled by varying quantity of suspension in the solvent. This co-deposition mechanism is investigated in detail.

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