

## The High Quality Colored Wind Chimes by Anodization on Aluminum Alloy

**Authors :** Chia-Chih Wei, Yun-Qi Li, Ssu-Ying Chen, Hsuan-Jung Chen, Hsi-Wen Yang, Chih-Yuan Chen, Chien-Chon Chen

**Abstract :** In this paper we used high quality anodization technique to make colored wind chime with a nano-tube structure anodic film, which controls the length to diameter ratio of an aluminum rod and controls the oxide film structure on the surface of the aluminum rod by anodizing method. The research experiment used hard anodization to grow a controllable thickness of anodic film on aluminum alloy surface. The hard anodization film has high hardness, high insulation, high temperature resistance, good corrosion resistance, colors, and mass production properties can be further applied to transportation, electronic products, biomedical fields, or energy industry applications. This study also in-depth research and detailed discussion in the related process of aluminum alloy surface hard anodizing including pre-anodization, anodization, and post-anodization. The experiment parameters of anodization including using a mixed acid solution of sulfuric acid and oxalic acid as an anodization electrolyte, and control the temperature, time, current density, and final voltage to obtain the anodic film. In the experiments results, the properties of anodic film including thickness, hardness, insulation, and corrosion characteristics, microstructure of the anode film were measured and the hard anodization efficiency was calculated. Thereby obtaining different transmission speeds of sound in the aluminum rod and different audio sounds can be presented on the aluminum rod. Another feature of the present invention is the use of anodizing method dyeing method, laser engraving patterning and electrophoresis method to make colored aluminum wind chimes.

**Keywords :** anodization, colored, high quality, wind chime, nano-tube

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