

Detecting pore opening point of anodic alumina via UV-visible spectrophotometer measurement

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Pore opening and removal of the oxide barrier layer is critical step in the fabrication of anodic aluminium oxide(AAO) with through-hole pore morphology. Three methods had been used to open the barrier oxide layer: wet chemical etching, ion milling and plasma etching. Among them, wet chemical etching is fast, convenient, inexpensive, and reliable. But it is difficulty to determine the necessary duration of the etching process and achieve preparation of AAO with desired pore diameters. In this work, it has been shown that, through UV-visible spectrophotometer measurement, the chemical etching of porous anodic aluminium oxide barrier layer can be performed to achieve nanometer-scale control of the pore opening. The dissolution of the oxide barrier film in phosphoric acid and the pore opening point were detected by significant decreases in the absorbance of AAO membrane at certain wavelength during etching.