

RF MEMS Filter 설계를 위한 폴리브덴박막의 기계적 물성 측정

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Measurement of Mechanical Properties of Mo thin film for Design of RF MEMS Filter

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Key Words: Thin Film(박막), Mechanical Property(기계적물성), RF MEMS Filter(알에프멤스필터)

Abstract : This paper presents a novel experimental method to investigate the strength of material, Mo, which is commonly used as an electrode in RF(radio frequency) microelectromechanical systems(MEMS) filter. An experimental method was developed to save time of set-up of specimen and easy to align. A non-contact position measuring system based on the principle of capacitance micrometry with 0.1nm resolution for displacement measurement was used to measure total displacement. And new specimen was designed and fabricated to easily manipulate, align and grip a thin-film for a tensile test. FE analysis for specimen was performed to calculate stress-strain curve from the measured load-displacement curve. The 2 kinds of widths were tested to investigate a size effect. The thickness of the thin film is 1.0 μ m and 2kinds of width were tested to get mechanical properties.

사각형 알루미늄 파이프의 횡하중하에서의 소성파괴 거동과 에너지 소산 능력

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Plastic collapse behaviour and energy dissipation capacity of square aluminium pipe under transverse load

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Key Words: plastic collapse(소성파괴), energy dissipation(에너지 소산), transverse load(횡 하중)

Abstract : A theoretical and experimental investigation has been carried out on the plastic collapse behaviour and its energy dissipation capacity of square aluminium pipe under quasi-static transverse loading condition. Two different mode of collapse has been observed from the tests and these have simplified for the estimation of theoretical energy dissipation capacity using limit analysis applying upper bound technique. The calculations of plastic work done during collapse has obtained from the load - deflection relationships. The theoretical prediction for the energy dissipation capacity shows good agreement compared to the experimental results.