

## 자동차용 베벨기어의 랜덤피로해석

김덕회<sup>†</sup> · 김기광 · 김재훈 · 이영신\*(충남대)**Random Fatigue Analysis of Automotive Bevel Gear**

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**Key Words:** Bevel Gear(베벨기어), Fatigue Analysis(피로해석), Bending Fatigue strength(굽힘피로 강도), Weibull analysis(와이블해석)

**Abstract :** Most common modes of the gear failure is tooth breakage, which is usually produced by the bending fatigue failure. It is important to manufacture the gears which can withstand the applied stresses in view of safety and economic requirement. In this study, fatigue test and analysis are performed to evaluate the bending fatigue strength of automotive bevel gear. Test fixtures of double tooth concept are considered to obtain the reliable fatigue test results. Fatigue life of automotive bevel gear is evaluated using Weibull analysis. To compare the test results and to verify the fatigue analysis procedures, fatigue analyses are carried out. Fatigue analysis results show that fatigue life and crack initiation site are agreed with test results. The random loading of bevel gear under the real driving conditions is defined here, and then the fatigue analysis under random loading is also performed.

## 마이크로 관류 시스템의 제작과 해석

자이드<sup>†</sup>(인하대) · 조종두\*(인하대) · 임채훈\*\*(울산대) · 하정미\*\*(울산대)**Fabrication and Analysis of a Micro-perfusion System**Mohd. Zahid Ansari<sup>†</sup>, Chongdu Cho<sup>\*</sup>, Chae-Hun Leem<sup>\*\*</sup>, Jeong-Mi Ha<sup>\*\*</sup>

**Key Words:** Ischemia (국소 빈혈) cell volume regulation; osmosis(삼투).

**Abstract :** This experimental study tries to analyze the physical parameters of a micro-perfusion system which can be used in many bioengineering experiments to create rapid, large regional intracellular changes within single ventricular heart cell. The cell swelling was found to be strongly dependent on the perfusion solution osmolarity. This volume change was measured, indirectly, by measuring the cell width change using video-microscopy and image-analysis software. This microperfusion device can be useful for studying the effects of localized osmotic gradient on myocyte function, estimating intracellular ion diffusion rates, and possibly, inducing regional changes in other important intracellular ions.