

## DOE를 적용한 카메라폰 모듈용 비구면 Glass렌즈의 성형조건 연구 ; 가압조건

차두환, 이준기, 김상석\*, 김혜정\*, 김정호\*  
전남대학교, 한국광기술원\*

### A Study on Molding Condition of Aspheric Glass Lenses for Mobile Phone Module Using Design of Experiments ; Pressing Condition

Du-Hwan Cha, Jun-Key Lee, Sang-Suk Kim\*, Hye-Jeong Kim\* and Jeong-Ho Kim\*  
Chonnam National Univ., Korea Photonics Technology Institute\*

**Abstract** : Aspheric glass lenses have many optical advantages, for glass have superior optical performance and an aspheric form can reduce optical aberrations. Recently, the use of it is rapidly expanding as the mass production becomes possible by glass molding press and so this method is considered as the best method for fabricating an aspheric glass lens, but it is difficult to control many parameters for pressing and cooling process. Design of experiments (DOE) is a very useful tool to design and analyze complicated industrial design problems. This study investigated the pressing conditions to mold aspheric glass lenses for mega pixel phone camera module using DOE method. We have applied fractional factorial design and the response variable was set form accuracy (PV) of aspheric surface of molded lens. The results of analysis indicates that all factors expect for pressing force of each step are available for the form accuracy (PV). It was the optimum condition of the designed pressing conditions for lowering the form accuracy(PV) value of molded lens that all factors were at the low level. The form accuracy (PV) of mold and molded lens under the optimum condition are  $0.85 \mu\text{m}$  and  $0.922 \mu\text{m}$  respectively.

**Keywords** : Aspheric glass lens, Design of experiment, Glass molding press