

EPSTEIN INSTITUTE SEMINAR ▪ ISE 651

Thermoforming of Precision Optics

ABSTRACT – Compression molding of precision optics is gradually becoming a viable manufacturing process for fabrication of low cost high performance optical elements. In this process, a glass or plastic preform, usually in the form of gob or disk is heated rapidly above its glass transition temperature and then pressed using two optical mold halves to finish dimensions followed by a slow cooling/annealing to room temperature. Professor Yi's research seeks fundamental understanding of glass molding process, from lens forming, to mold making, to molding process modeling. The scope of his research also includes work in numerical modeling and experimental measurements of stress and structural relaxation, as well as refractive index variation in molded optics. In addition, graphene coatings and their impact on the performance of molded optics are also the topics of his investigation. Most recently, his work in molding of chalcogenide glasses has established a foundation for an alternative process for high precision infrared optical components manufacturing. Such infrared optics can potentially replace previously more expensive and difficult to machine crystalline materials.



Dr. Allen Yi

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SPEAKER BIO – Dr. Allen Yi received his Ph.D. in mechanical engineering from Boston University in 1993. He conducted doctoral research under the direction of Professor Thomas Bifano working on an innovative ultraprecision machining process for ceramic mirrors. He subsequently joined Corning Precision Lens as a staff scientist where his main responsibilities included development of advanced manufacturing processes of optical molds for refractive and diffractive lenses. In 2002, he joined The Ohio State University. He was promoted to associate professor with tenure in 2008 and to full professor in 2012. Professor Yi's research activities have been in the general area of precision engineering with a focus on high volume optical fabrication, freeform and microoptics fabrication as well as micromachining processes for medical and biomedical devices. Professor Yi has been a member of the ASPE (American Society for Precision Engineering) since 1991. Outside ASPE, he frequently participates in the conferences at EUSPEN and ASPEN.

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THURSDAY, NOVEMBER 30, 2017

3:30PM – 4:50PM

USC ANDRUS GERONTOLOGY CENTER (GER), Room 206