Print this Page for Your Records Close Window

Program#/Poster#:	4327/B685
Abstract Title:	**A New Clinical Instrument to Objectively Measure Intraocular Scatter**
Presentation Start/End Time:	Wednesday, May 04, 2005, 8:30 AM -10:15 AM
Location:	Hall B/C
Reviewing Code:	244 physiological optics - VI
Author Block:	*S.O. Luque[1], J.M. Bueno[2], F.Diaz-Douton[1], J.Pujol[1], M.Arjona[1], P.Artal[2].* [1]Óptica y Optometría, Universidad Politecnica de Cataluna, Terrassa, Spain; [2]Laboratorio de Óptica, Universidad de Murcia, Murcia, Spain.
Keywords:	441 cataract, 660 refractive surgery: optical quality, 609 optical properties

Purpose: To develop a new clinical instrument that permits to objectively measure the amount of intraocular scatter. To show examples of its application in patients suffering from different pathologies.
Methods: Recently, a commercially available device (OQAS™, Visiometrics S.L.) based on the double-pass technique has been developed to objectively estimate the retinal image quality, which includes the effect of both aberrations and scatter. However, the impact of the intraocular scatter cannot be isolated and quantified. To overcome this limitation, we incorporated a polarimeter in the OQAS instrument. It was composed of a fixed linear polarizer in the illumination pathway and an analyzer unit (quarter-wave plate plus linear polarizer) in the registration pathway. The rationale for the used approach was recently suggested (Bueno et al., J.Opt.Soc.Am.A, 2004): ocular depolarization is directly related to the amount of scattered light in the eye. Four double-pass images were registered for independent polarization states in the ananlyzer unit. From these images the degree of polarization, that is related to the degree of scattering (DOS), was computed.
Results: A modified polarimetric OQAS instrument has been adapted to be fully functional in a clinical environment. The instrument includes complete automatic control and data processing. The system was first calibrated using an artificial eye exhibiting variable light scatter properties. Preliminary measurements in different groups of patients showing different levels of scatter were carried out. DOS values showed a good repeatability within the same patient and among patients with similar pathologies. Statistically significant differences in DOS values were obteind when measuring different groups of patients. These values were not necessarily correlated with aberration measurements, showing the potential of this technique to separate out scatter from aberrations.
Conclusions: A new clinical instrument allowing estimating objectively intraocular scatter has been developed. The instrument appears to be robust enough to differentiate eyes with different levels of scatter. This instrument can be quite useful in clinical diagnosis, ranging from early cataract detection or identification of ocular pathologies, to follow up of different refractive surgery procedures potentially affecting intraocular scatter.

Commercial Relationship:	**S.O. Luque**, None; **J.M. Bueno**, Visiometrics S.L. F, P; **F. Diaz-Douton**, None; **J. Pujol**, Visiometrics S.L: I; **M. Arjona**, Visiometrics S.L. I; **P. Artal**, Visiometrics S.L. F, I, P.
Support:	MCyT- DPI2002-00118 ; FIT-020400-2004-49