Blink of an eye - A Biotribology Quest towards Patient Comfort

Christian Mathis
Erasmus University of Rotterdam

Abstract:
Blink of an eye - a biotribology quest towards patient comfort. The design of contact lenses has been driven by the correlation of ocular friction with patient comfort. To accurately characterize friction upon blinking, both mechanical and bio-chemical properties of the tribological contact are to be understood. Over the past years research at SuSoS AG has brought forward novel methodologies shedding new light on ocular friction and thereby enables scientists and product developers to better understand the ocular environment and its sliding interfaces. The presentation aims at introducing the technical developments over the past 15 years with focus on the challenges of characterizing a biological sliding interface. Via in-depth analysis of the chemical nature of the contributing elements in the tribological system, relevant test-configurations could be established. Dedicated surface-modifications and experimental setups closely mimicking the sliding conditions revealed new perspectives of blinking motion.

Biography:

Dr. Christian Mathis-Ullrich simultaneously studied aerospace engineering at the Technical University of Delft and business economics at the Erasmus University of Rotterdam. After gaining international project experience in the coating industry in the Netherlands and Liechtenstein, Dr. Mathis-Ullrich researched biologically-inspired lubricating coatings during his doctorate at ETH Zurich. Together with the Swiss company SuSoS AG, in his work he optimized and brought an innovative lubricious coating technology specifically for medical applications to market. Since 2014, Dr. Mathis-Ullrich has been responsible for technical development of lubricious coatings and is heading the strategic and business development at SuSoS AG since 2018. Dr. Mathis-Ullrich is a multiple award-winning (co-)author of peer-reviewed scientific publications and patents, guest scientist at the Laboratory for Surface Science and Technology at ETH Zurich and a board member of the Swiss Association for Materials Science and Technology.