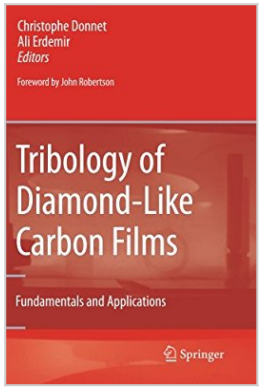

Tribology of Diamond-like Carbon Films: Fundamentals and Applications

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This book highlights some of the most important structural, chemical, mechanical and tribological characteristics of DLC films. It is particularly dedicated to the fundamental tribological issues that impact the performance and durability of these coatings. The book provides reliable and up-to-date information on available industrial DLC coatings and includes clear definitions and descriptions of various DLC films and their properties.

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Editorial Review

From the Back Cover

Since their initial discovery, diamond-like carbon films have enjoyed an overwhelming interest from both the scientific and industrial communities. There now exist reliable models, computer simulations and experimental findings that clearly demonstrate their exceptional friction and wear properties. ***Tribology of Diamond-like Carbon Films*** discusses the most important structural, chemical, mechanical and tribological characteristics of DLC films, and emphasizes their applications in mechanical systems ranging in size from nano/micro (like MEMS, NEMS) to macro scale devices (like bearings, gears, aerospace mechanisms, various engine parts and components). The chapters of this book are particularly dedicated to the fundamental tribological issues that impact the performance and durability of these coatings in numerous industrial applications including automotive, microelectronic, aerospace, biomedical, and manufacturing.

Written by some of the most prominent world experts representing academia, national laboratories, and industrial companies, ***Tribology of Diamond-like Carbon Films*** is an important book for researchers and engineers.

About the Author

Pr CHRISTOPHE DONNET is full professor of chemistry and material engineering in the University Jean Monnet, France. He is member of the "University Institut of France". He received his Ph.D. degree in analytical chemistry from the University of Lyon, France, in 1990. He has been associate professor in the French engineering school "École Centrale de Lyon" and is now full professor in the University Jean Monnet, Saint-Etienne, France. He performs research activities in thin film deposition and characterization, with highlights on correlations between deposition conditions, nanostructure, chemistry and tribological properties of coatings. Most of his works is related to superlow friction of MoS_2 films and Diamond-like carbon (DLC), in particular through a strong collaboration with the IBM research division (Yorktown Heights, NY). He paid special attention on understanding the effect of hydrogen content of diamond-like carbon films on their friction behavior in ultra-high vacuum. His is now working on ultrashort laser processes to deposit doped and alloyed DLC films, and to induce surface microstructuration, by pulsed laser ablation. He is co-author of about 75 papers in refereed journal articles, 7 book and handbook chapters, and has given more than 125 technical presentations worldwide, including 12 invited talks. He becomes junior member of the "University Institute of France" in 2005.

Dr. ALI ERDEMIR is a Senior Scientist in the Energy Technology Division of Argonne National Laboratory. He received his B.S. in Metallurgy from Istanbul Technical University in 1977; and his M.S. and Ph.D. degrees in Materials Science and Engineering from Georgia Institute of Technology in 1982 and 1986, respectively. Since joining Argonne in 1987, he has concentrated on the development of carbon-based novel tribomaterials and coatings that can provide exceptional friction and wear properties. In recognition of his outstanding research work in the field, Dr. Erdemir has received several prestigious awards and honors,

including three R&D-100 Awards in 1991, 1998, and 2003, the Innovative Research Award of ASME-International, 1999; two Al Sonntag (in 1992 and 2001) and an Edmond E. Bisson (in 1998) Award from the Society of Tribologists and Lubrication Engineers (STLE); Discover Magazine Award in 1998; Distinguished Engineering Alumni Award of the Georgia Institute of Technology in 2000. He has been an active member of several professional societies, including STLE, ASME, ASM-International, AVS, and MRS and he is a fellow of ASM-International and STLE. Dr. Erdemir is the author or co-author of more than 110 refereed journal articles, 8 book/handbook chapters, and has given more than 200 technical presentations worldwide (many of which are invited). He holds 7 U.S. Patents.

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