Biobased Lubricants and Greases
Technology and Products

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BIOBASED LUBRICANTS AND GREASES
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<td>Martin &amp; Ohmae</td>
<td>Nanolubricants</td>
<td>April 2008</td>
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<td>Lansdown</td>
<td>Lubrication and Lubricant Selection, 3rd Edition</td>
<td>November 2003</td>
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<td>Neale, Polak &amp; Priest (eds)</td>
<td>Handbook of Surface Treatment and Coatings</td>
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BIOBASED LUBRICANTS AND GREASES
TECHNOLOGY AND PRODUCTS

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About the Authors

Lou A.T. Honary

Lou A.T. Honary is a professor and founding director of the University of Northern Iowa’s National Ag-Based Lubricants Center. He joined the UNI faculty in 1982 and in 1991, he initiated the research and development of soybean oil based lubricants and greases, leading to the creation of the UNI-NABL Center which is a premier applied research center specifically focused on biobased lubricants and greases.

As an applied researcher, Honary’s work has resulted in eight patents or co-patents, two more patents pending and numerous publications and presentations at national and international conferences. With the University of Northern Iowa’s Research Foundation, in 2000, Honary formed a commercial lubricants and grease manufacturing company that has brought to the market various biobased products and is recognized as a leader in biobased grease manufacturing. With over 40 commercial products currently on the market having their origins to his research, Honary is considered perhaps the most knowledgeable expert in the area of biobased lubricants and greases in the United States.

Professor Honary has served in leadership capacities in many organizations including memberships in the American Oil Chemist Society (AOCS), Society of Tribologists and Lubrication Engineers (STLE), Society of Automotive Engineers (SAE), National Lubricating Grease Lubricating Institute (NLGI), European Lubricating Grease Institute (ELGI), American Society for Testing and Materials (ASTM), and National Fluid Power Association (NFPA). He has served as president of the Fluid Power Society (FPS), in Iowa, Member At Large on the Board of Directors of the International Fluids Power Association (IFPS), an Officer on the ASTM D02 Committee, and a member of the Board of Directors of NLGI, and chairman of a working group on the performance of biobased greases for ELGI.

Dr. Honary is an entrepreneurial professor recognized for his visionary approach to research. He has served on an Iowa Governor’s committees, on a congressionally mandated Biomass Research and Development Advisory Committee under the United States Department of Energy (DOE) and Department of Agriculture (USDA), and has served as a consultant to government and industry. Honary’s consulting work has included the preparation of a series of protocols for the creation of specifications for eleven biobased hydraulic oils for the US Department of the Navy to be used as a substitute for conventional hydraulic fluids.

As a passionate promoter of biobased products, Honary is known for many firsts, including patenting the first soybean oil based tractor hydraulic fluid, the first soybean oil based
transformer oil, the first soybean oil based wood preservative as a creosote substitute, the first biobased solid stick lubricant for railroads, the first soybean oil based rail curve grease among many other products. In 2010 he and his team introduced a revolutionary efficient and safe heating process using microwave energy for the manufacturing of biobased greases.

Honary is a sought after speaker at various technical conferences owing to his ability to present complex concepts associated with biobased lubricants in a practical and easy to understand approach. This book provides an example of his passion for teaching by presenting an engaging and easy to follow approach, making this book both enjoyable to read and a resource to keep.

**Erwin W. Richter**

Erwin Richter was born in 1934. He taught in the public schools of Michigan before receiving his PhD in biochemistry from the University of Iowa in 1970. He was a member of the faculty at the University of Northern Iowa from 1963 to 1996. In 2001 he began working at The University of Northern Iowa’s National Ag-Based Lubricants Center as a consultant and continues there today. His interests in chemistry led him to develop his knowledge in the area of biolubricant development and testing. He is the author of several books and laboratory manuals dealing with chemistry education.
Vegetable oils present properties that are suitable for industrial and automotive lubricants and grease applications. They also present potential for usability as an alternative to petroleum when the demand for this finite resource is ever increasing.

The goals of writing this book include educating the next generation of students and professionals in this promising field to create and use biobased lubricants and greases. As the world petroleum resources continue to deplete, resource-poor and developing countries will have to struggle to compete to acquire high priced petroleum and petroleum products. Creating lubricant (and fuel) products from renewable sources can offer self sufficiency and potentially economical alternatives to the countries most desperate for these advantages.

After nearly two decades of research and development of biobased lubricants and greases, we hope that sharing our knowledge and expertise will help to create a long standing resource for the future. Both authors are seasoned professors and researchers, and the book is written in a way that it teaches the concepts for general audience comprehension. For more advanced concepts in biobased lubricants and greases, there are other sources that delve into the engineering and agronomical aspects of our work in greater detail.

With the hope of a better, greener future, we offer this book to our future generations.

Lou Honary
Erwin Richter