

## **Gear Oil**

Gear oil is an important industrial lubricant. If stable and high-quality bio-based gear oils and additives can be developed, petroleum-based lubricants may be a thing of the past. Researchers, including ISTC's Dr. B.K. Sharma, have been investigating the use of soybean oil-based gear oils. They thermally polymerized soybean oil, then mixed it with additives and diluents. The final formulation displayed viscosity and wear scar values comparable to or better than commercially available gear oils. In another project led by Sharma, researchers synthesized lubricant additives based on boron and epoxidized soybean oil in a simple patent-pending method. The additives were tested in a number of gear oil lubricants and were found to reduce wear scar and improve oxidation onset. These results showed the promise of boron technology in improving industrial gear oils.



### **Waste Utilization**

**Advancing Use of Recycled Material in Asphalt**

**Beneficial Use of Plastic Wastes**

**Biochar**

**Bio-oils and Biolubricants**

**Approaches to the Comparison of Oil Extraction Methods for Algae**

**Antioxidants from Wood-derived Pyrolyzates (Bio-oils)**

**Oils and Antioxidants in Beans**

**Complete Utilization of Coffee Grounds**

**Chemical Properties of Biocrude Oil from the Hydrothermal Liquefaction of Spirulina Algae, Swine Manure, and Digested Anaerobic Sludge**

**Gear Oil**

**Heat-bodied Oils make Good Industrial Lubricants**

**Milkweed Seed Fatty Acids**

**Low Value Natural Oils to Biolubricants and Biofuels**

**Predicting Products from Algae**

**Upgrading Bio-crude Oils**

**Waste to Bio-oils**

**Novel Catalyst for Breaking Down Lignin**

**Biobinders**

**Clean Coal**

**Liquid Rubber Modifier in Asphalt Binders**

**Mud to Parks**

**Nano-CarboScavengers**

**Solar PV**

**Read about older waste utilization projects**

- B.K. Sharma
- John Scott

### Publications

Gear oil formulation designed to meet bio-preferred criteria as well as give high performance

Antiwear Additive Derived from Soybean Oil and Boron Utilized in a Gear Oil Formulation



One Hazelwood Drive, MC-676  
Champaign, IL 61820  
p: 217-333-8940  
[Email us](#)

**Home of Illinois' State Scientific Surveys**  
Illinois Natural History Survey  
Illinois State Archaeological Survey  
Illinois State Geological Survey  
Illinois State Water Survey  
Illinois Sustainable Technology Center



Email the [Web Administrator](#) with questions or comments. For permissions information, [contact the Illinois Sustainable Technology Center](#).  
©2020 University of Illinois Board of Trustees. All rights reserved.

[Privacy statement](#) | [Intranet](#) | [Admin](#)