

115TH CONGRESS  
1ST SESSION

# H. RES. 306

Recognizing the impact of tribology on the United States economy and competitiveness in providing solutions to critical technical problems in manufacturing, energy production and use, transportation vehicles and infrastructure, greenhouse gas emissions, defense and homeland security, health care, mining safety and reliability, and space exploration, among others, and recognizing the need for increased research and development investments in tribology and related fields.

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IN THE HOUSE OF REPRESENTATIVES

MAY 2, 2017

Mr. RYAN of Ohio (for himself, Mr. LIPINSKI, and Mr. MICHAEL F. DOYLE of Pennsylvania) submitted the following resolution; which was referred to the Committee on Science, Space, and Technology

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## RESOLUTION

Recognizing the impact of tribology on the United States economy and competitiveness in providing solutions to critical technical problems in manufacturing, energy production and use, transportation vehicles and infrastructure, greenhouse gas emissions, defense and homeland security, health care, mining safety and reliability, and space exploration, among others, and recognizing the need for increased research and development investments in tribology and related fields.

Whereas tribology is a branch of science and engineering encompassing scientific disciplines related to the controlling

of friction, reduction of wear loss, and development and application of novel lubrication strategies;

Whereas almost every aspect of our lives is impacted by technologies that benefit from the ability to control friction and wear loss;

Whereas approximately a third of the world's primary energy consumption is attributed to friction, and about 70 percent of equipment failures is blamed on lubrication breakdown and wear loss;

Whereas loss of energy to friction and material losses due to wear in mechanical systems such as internal combustion and gas turbine engines account for huge economic and environmental burdens;

Whereas finding ways to minimize friction and wear through new technologies in tribology can have an enormous impact on the economy;

Whereas improving durability of goods and equipment has a dramatic impact on reducing our demand for finite resources such as raw materials;

Whereas proper application of tribology principles reduces energy usage, lowers the cost of maintenance and replacement, and increases reliability;

Whereas new solid lubricants and biodegradable and synthetic lubricants developed from fundamental research are critical to a greener and more sustainable future;

Whereas improvements in manufacturing productivity and efficiency enabled by reduction of friction and wear loss are crucial to our economic competitiveness;

Whereas energy conservation and successful generation of clean energy, such as with wind turbines, rely on principles of tribology;

Whereas reduction of friction is at the very core of improving fuel economy and reducing greenhouse gas emissions;

Whereas safety, reliability, and durability of mechanical products and systems have critical implications on our global reputation with respect to trade and exported goods;

Whereas reduction of friction and increasing durability of artificial joints, prosthetics, and implants are crucial to maintaining quality of life for veterans and the aging population;

Whereas tribology is used to improve everyday personal care products such as toothpaste, skin creams, and hair products;

Whereas tribology principles are crucial to our national defense and homeland security through the use of lighter-weight weapon systems, more efficient and safe operation in a wide range of environments, higher reliability, longer life, and reduced maintenance;

Whereas scientific understanding of friction and wear loss improves maintenance and reliability of the Nation's transportation infrastructure, resulting in a better return on public funding and gains in public safety;

Whereas mining safety and reliability and durability of mining equipment can be improved through proper use of tribology;

Whereas reliability, function, and durability of outer space mechanisms and rockets are essential for future space missions; and

Whereas the enormous potential of tribology in solving global challenges is hampered by limited investments in research, thus limiting innovations in new materials and lubrication technologies: Now, therefore, be it

1       *Resolved*, That the House of Representatives—

2               (1) recognizes the impact of tribology on the  
3       United States economy and competitiveness;

4               (2) recognizes the importance of tribology in  
5       providing solutions to critical technical problems in  
6       manufacturing, energy production and use, transpor-  
7       tation vehicles and infrastructure, greenhouse gas  
8       emissions, defense and homeland security, health  
9       care, mining safety and reliability, and space explo-  
10      ration, among other sectors;

11              (3) encourages Federal agencies to develop and  
12      implement programs and projects related to  
13      tribology;

14              (4) encourages the formation of public-private  
15      partnerships to advance fundamental research and  
16      accelerate the development of tribology-related prod-  
17      ucts and technologies;

18              (5) recognizes the need for increased research  
19      and development investments in tribology and re-  
20      lated fields; and

21              (6) encourages the National Academy of Engi-  
22      neering to conduct a comprehensive survey of the

- 1 status of research and development in academia and
- 2 government laboratories and recommend a course of
- 3 action to accelerate innovations in tribology.

