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Molybdenum Disulfide Based Greases with Enhanced Wear and Friction Performance

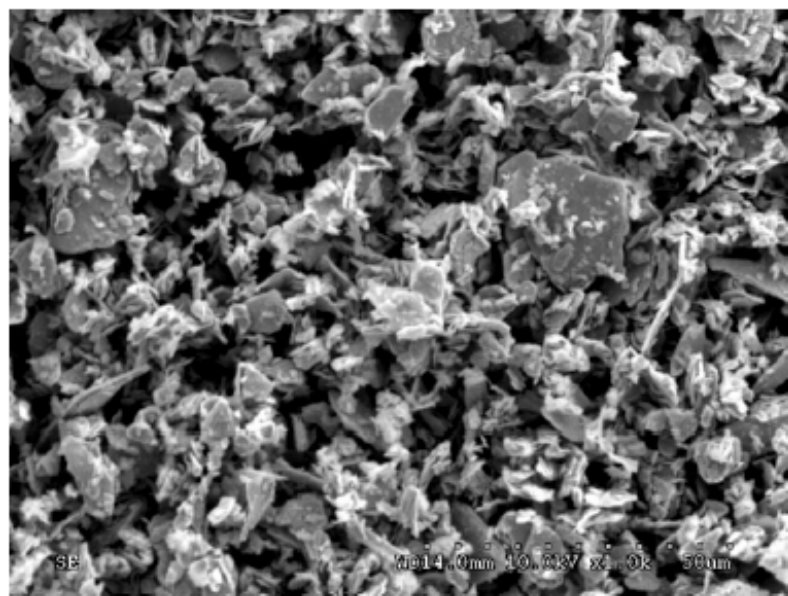
INVENTOR: Pranesh Aswath

TECHNOLOGY NEED

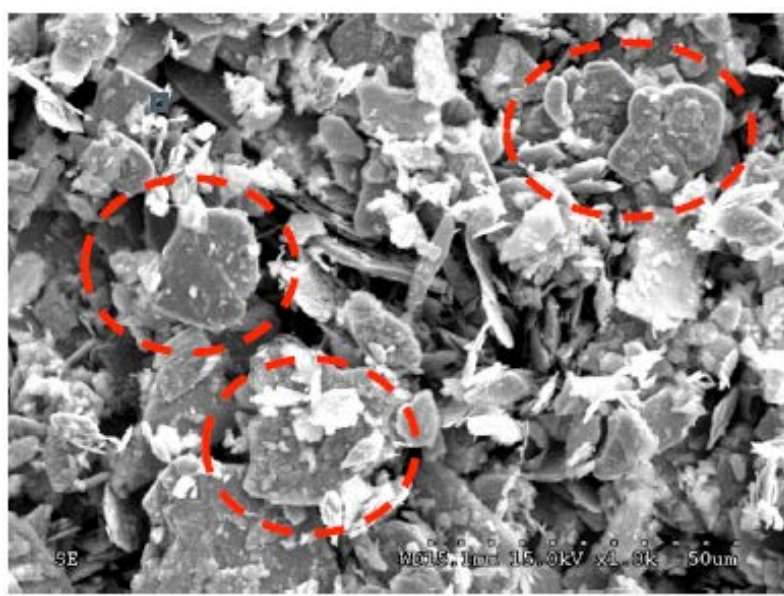
Molybdenum disulfide (MoS_2) is widely used as an additive in solid lubricants because of its low friction properties and robustness. However, at low loads, it has shown instances of excessive wear and higher friction. Hence, there is a need to improve the load carrying capabilities properties of Molybdenum disulfide based greases for low loads.

INVENTION DESCRIPTION/SOLUTION

Researchers at UTA have found a way to mitigate low load wears and reduce friction in MoS_2 based lubricants. A sample mixture of MoS_2 based grease and sulfurized additives were pre-milled and their wear properties compared to that of unmilled MoS_2 grease. Both samples were tested under spectrum loading conditions and it was seen that the pre-milled sample had significantly improved wear properties over a range of loads and spectrum loading conditions. The wear track of the lubricant was analyzed using Stereo Optical Microscopy and Scanning Electron Microscopy (SEM). The result for SEM is shown below-



Unmilled MoS_2 (1000X)



Milled MoS_2 (1000X)

From the above, it is clearly seen that the unmilled MoS_2 has sharp edges and corners as compared to the milled MoS_2 which is highlighted with circles.

APPLICATIONS

- Grease Production

KEY BENEFITS

- Better lubricant performance over a range of loads

STAGE OF DEVELOPMENT

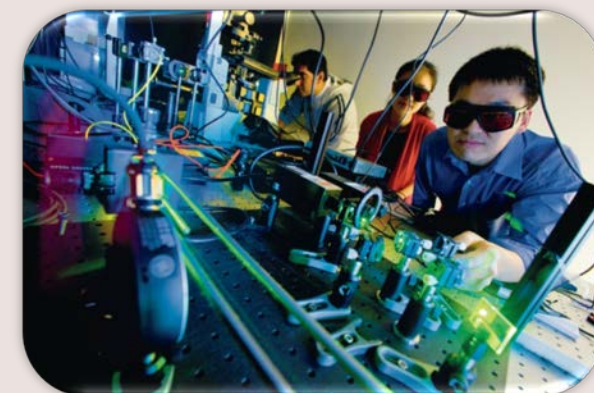
Prototyped and tested

INTELLECTUAL PROPERTY STATUS

Provisional patent filed

REFERENCE

[Role of \$\text{MoS}_2\$ morphology on wear and friction under spectrum loading conditions](#)



More about the Inventor:
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