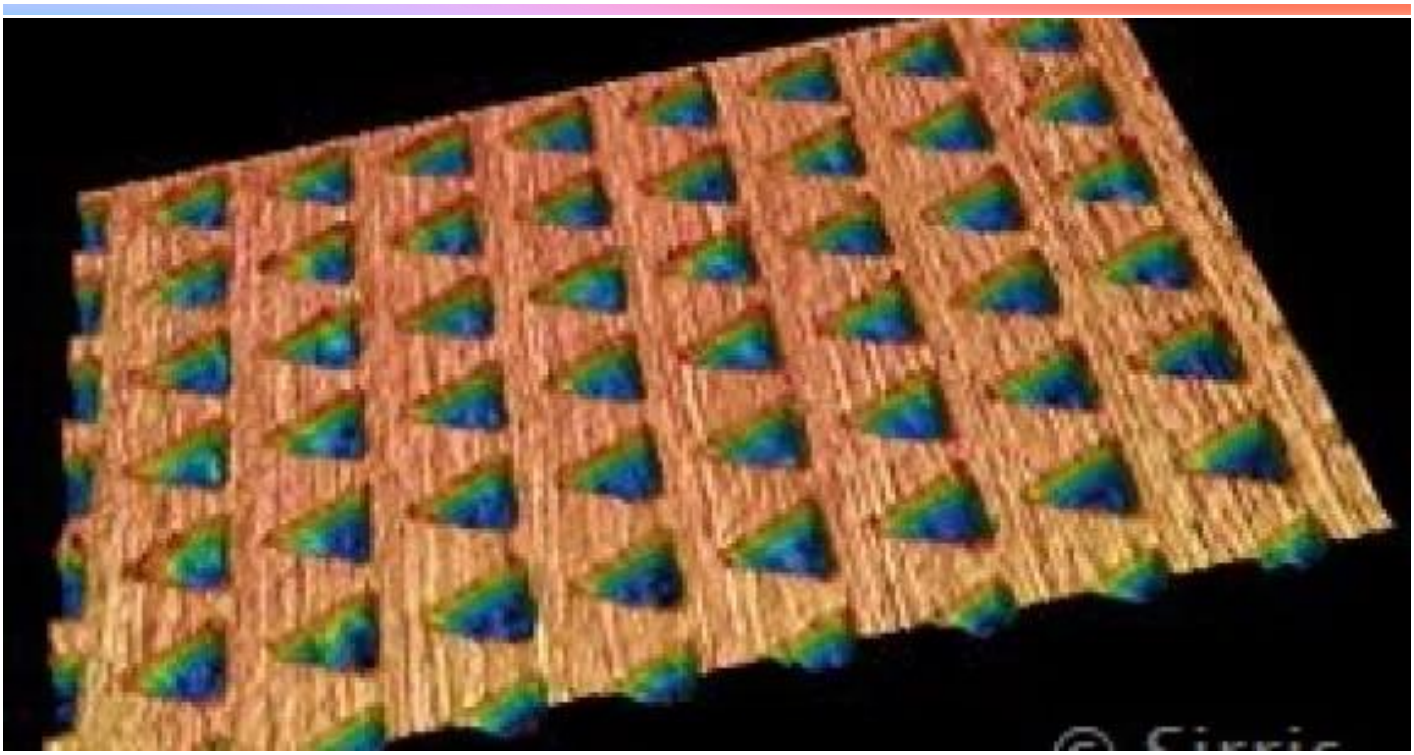

Femtosecond laser technology reduces friction

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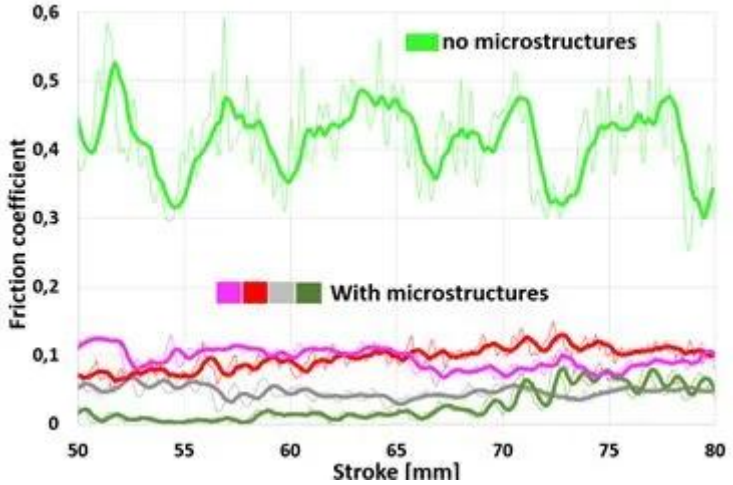
Friction between moving parts plays an important role in motors, bearings, hinges and many other applications. The lower the friction, the less energy is needed to make parts move and also reduce wear and tear. Shocks (slip-stick effect) are reduced by making the transition from standstill to movement as smooth as possible. The determining factor here is what the surfaces in contact with each other look like (roughness), as well as the lubricant used.

Research at Sirris has shown that applying small holes in sliding surfaces has a positive effect on friction behaviour. The friction (frictional force) decreases to more than a factor of 4, as shown in the figure above. The same tendency is observed in the slip-stick effect.

Pure and sharply defined structures

The sub-micron structures are made at Sirris using femtosecond laser technology. Compared to the traditional nano-pulsed laser, this recent technology is known for creating pure and sharply defined structures.

An example of this positive effect is shown in the figure below, where the friction coefficient is measured while the sample oscillates. This for different hole geometries and density, in an environment with a grease as a lubricant. For samples with microstructures, the coefficient of



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The graph shows that friction decreases when microstructures are applied.

(Photo above shows microstructures applied to a surface to reduce friction and the slip-stick effect)

Authors