Evolution of friction coefficient in the tribological test

**Materials and their applications**

**FUNCTIONAL NANOCOMPOSITE COATINGS**
- Nanocomposite TiC/a-C:H coatings
- MoS2-based coatings
- Oxide coatings – V2O5,

Aircraft gear drives, conventional steel gear systems, and numerous elements in motor-sport engines and a great number of other applications.

**Macroscopic scale**
- Thermo-mechanical analysis of coupled wear – oxidation and temperature field at transient and steady state

**Wear-friction in tribological test (ball on disk, reciprocating test) MoS2-Ti**

<table>
<thead>
<tr>
<th>R=0.5 mm, Fn=1N</th>
<th>R=4 mm, Fn=1N</th>
<th>R=3 mm, Fn=1N</th>
</tr>
</thead>
</table>

Influence of Load on the friction coefficient in reciprocating test – Al2O3 ball, R=3 mm

**Wear and friction model: FEM analysis**

\[ \tau_n = (A_2 - (A_1 - A_2)e^{-A_1\sigma_n})\sigma_n \]

**Conclusion**
- experiments show correlation between friction coefficient \( \mu \) and normal stress \( \sigma_n \)
- experimental results of wear process depend on ball radius R and normal force
- friction coefficient \( \mu \) evolves during wear process