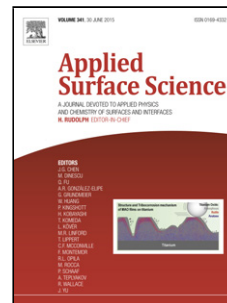


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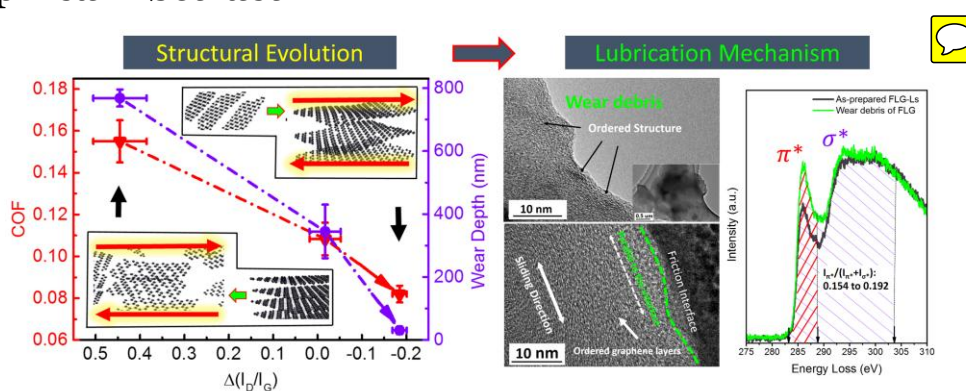
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Graphical Abstract



Highlights

- The lubrication properties of graphene additives with different exfoliation degrees were investigated.
- Highly exfoliated graphene changed to ordering, even graphitization under friction.
- The graphene reached slippage between its layers based on the ordered tribofilm on the friction interface.

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