



Lecture No. 138

**Czech Society for Mechanics
and Institute of Thermomechanics, CAS**

invite you to a lecture and discussion within
the lecture series **Institute of Thermomechanics Seminar**

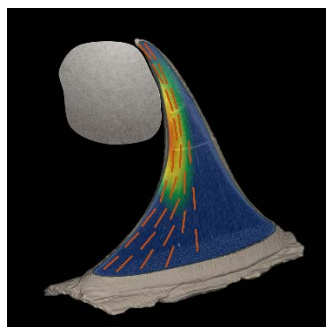
Rose prickles secure their functions in the presence of mechanical failure

given by

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Rose prickles are small-scale, plant-based anchoring tools of multifunctional biomechanical roles, combining physical defense against herbivores and growth support on surrounding objects. By employing multiscale structural observations, mechanical testing, and finite element simulations, we unveil that the dog rose (*R. Canina*) prickle incorporates complementary structural-mechanical modifications at different length scales, resulting in macroscopic stress-locking effects that provide the prickle with extreme damage-resistant capabilities—which secure its puncturing, anchoring, and tearing functions after mechanical failures. These novel functional design strategies, unique to plant-based biomechanical tools, may promote micro-engineered material designs for futuristic anchoring platforms.



**The lecture will be held on Wednesday, August 5, 2025 at 10:00
in the building of the Institute of Thermomechanics (large lecture room),
Dolejškova 5, 182 00 Prague 8**

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