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Title: Relaxation dynamics of femtosecond-laser-induced temperature modulation on the surfaces of metals and semiconductors

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## Highlights

The surface temperature dynamics in Ti and Si is studied upon fs laser irradiation

To model conditions of LIPSS formation, the laser energy coupling is modulated

Temperature modulation survive more than 10 ps in Ti and more than 50 ps in Si

Under certain conditions, periodic nano-melting develops along the surface

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