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**Reversible, high temperature softening of plasma-nitrided hot-working steel
studied using *in situ* micro-pillar compression**

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Abstract

The high temperature mechanical behaviour of plasma-nitrided steel is investigated at high temperatures using *in situ* high temperature micro-pillar compression. It is observed that the strengthening brought about by nitriding is steadily reduced when increasing the testing temperature, until it is completely negated at 500 °C.

Keywords: Hot-working steel; Plasma-nitriding; Micromechanics; High temperature; FIB

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