Università degli Studi di Pavia

Dipartimento di Ingegneria Civile e Architettura

in collaboration with

Centro di Simulazione Numerica Avanzata – CeSNA
Istituto Universitario di Studi Superiori

SEMINAR

Making Smart Materials Smarter

Continued advances in shape memory alloys (SMA's) have facilitated their implementation in countless applications including aerospace, automotive, medical and micro-electromechanical (MEMS) devices. The ability of these alloys to 'remember' a shape has largely accounted for its popularity and be classifies as a smart material. Their Inherent diffusionless solid state phase transformation experienced at discrete temperatures is closely linked to the shape memory effects. Until now, they have been largely limited to 'remembering' a single memory. Theoretically, smart materials can be made smarter by locally altering the shape memory effect, which increases the number of memories in a monolithic alloy. Possessing this ability promises to enhance SMA functionality while enabling new applications to be realized. The current presentation details the effects of a novel processing method, called the Multiple Memory Material (MMM) technology, which can alter the local transformation temperatures of SMAs. Proof of concept will be demonstrated by embedding additional memories into a monolithic NiTi alloy.

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