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Shape-Memory Alloys for Multiple Applications in the Materials World

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Abstract: *Shape-memory alloys (SMAs) are stimuli-responsive shape-changing polymers. They are of great interest for fundamental research and technological innovation. Traditional shape memory alloys (SMAs) are those capable of memorizing a temporary shape and recovering to the permanent shape upon heating. Although such a basic concept has been known for half a century, recent progresses have challenged the conventional understanding of the polymer shape memory effect and significantly expanded the practical potential of SMAs. In this article, notable recent advances in the field of SMAs are highlighted. Particular emphasis is placed on how the new developments have changed the conventional view of SMAs, what they mean for practical applications, and where the future opportunities are. Shape memory alloys are used in a variety of fields, such as medical or aeronautical. Other fields of knowledge have been researching these materials, attracted by their capacity to dissipate energy through high-strain hysteretic cycles without significant residual strains. Because of these interesting properties for seismic protection, an example of the possible beneficiaries of these materials is civil engineering structures*

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