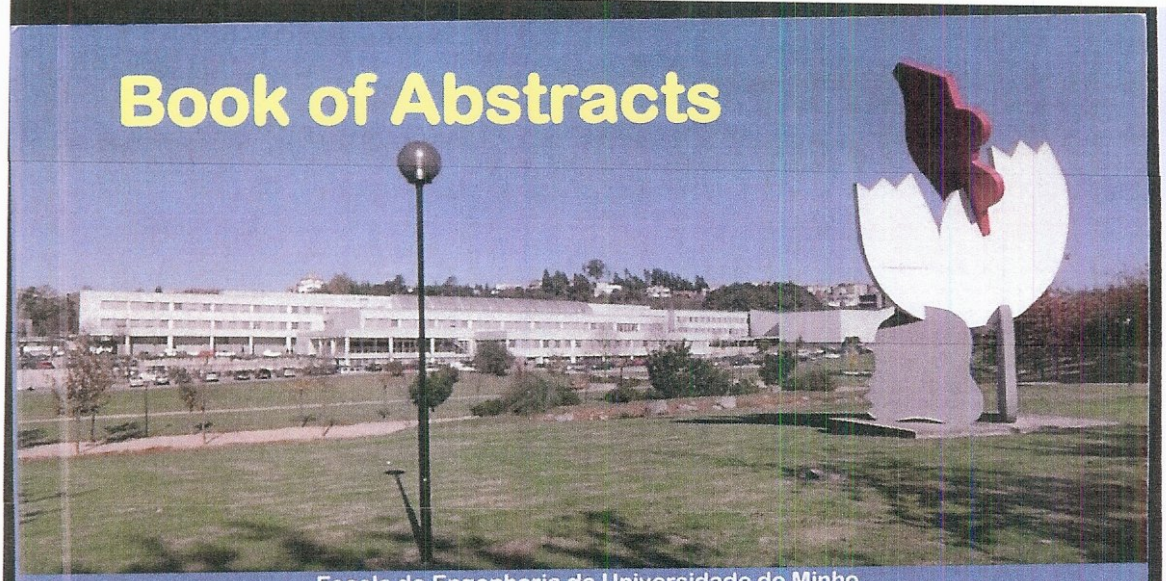
# Book of Abstracts



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# ANALYSIS & EVALUATION OF SMA WIRE BEHAVIOUR IN ORDER TO PRODUCE WEFT-KNITTED FABRICS

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It is widely acknowledged within the textile engineering community that Shape Memory Alloys (SMA), exhibit great potential for several applications. This paper presents the research undertaken at the University of Minho aiming to study the behaviour of weft-knitted fabrics produced with SMA nitinol® wires. A SMA nitinol® wire of type B (which shows SME at body temperature) of 210μm diameter has been used to produce weft-knitted fabrics with different loop types, e.g. stitch, tuck and miss. The influence of the loop type on the performance of the weft-knitted fabric, in terms of energy absorption, has been analyzed. Tests were carried out on a tensile machine testing under 2 different conditions: room temperature and at "Austenite phase" temperature. The results aim to help future applications of SMA in the development of new textile materials.

Figure 1 below shows the mechanical behaviour of the SMA nitinol® wire after tensile testing at room temperature.

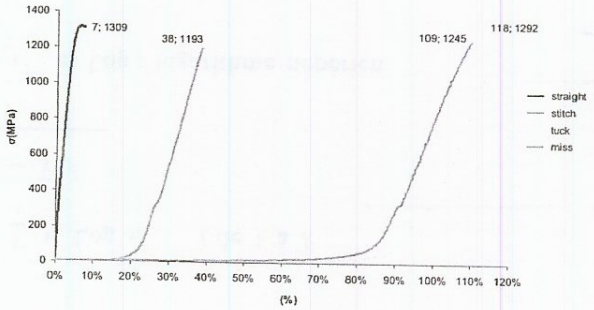


*Figure 1- Mechanical behaviour tests for nitinol® wires.*

**Keywords**: SMA wire; Weft-knitted fabric; Stitch; Tuck; Miss; Energy absorption.