NITINOL – A NEW MATERIAL FOR BIOMEDICAL APPLICATIONS

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Abstract

The present work surveys some of the more recent studies preformed on the chemical and physical properties of NiTi alloys (Nitinol), aiming at its use as a biomaterial. On this basis, the shape memory effect is examined, as well as the corrosion resistance of the alloy when in contact with the human fluids, both under static and dynamic conditions. It is concluded that, in spite of the enhanced mechanical behaviour, which makes the material suitable for a wide range of medical applications, the results on the corrosion resistance and biocompatibility of the alloy are still not conclusive. Therefore, more information should be collected on the corrosion behaviour of the material, giving special attention to Nitinol used under stress, after deformation and under loading/unloading conditions, to avoid the lack of predictability on the corrosion behaviour of this alloy under dynamic conditions.