**Thermostructural study of FeCu + X% MWCNTs**

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**Abstract**

In this work, the contribution of multiwall carbon nanotubes (MWCNT) in FeCu metallic matrices nanocomposites been investigated. The use of this new type of materials has been required by many industrials fields in particular aerospace. The prepared samples Fe-Cu contained 0, 0.25, 0.75, and 1.00% MWCNT respectively. The nanocomposites are then characterized using techniques, such as dilatometry, calorimetry, thermogravimetry, TEM, SEM, X-ray diffraction (XRD), and Raman spectrometry. The results have shown that the relative variations in elongation vary according to the temperature range and the FeCu1%MWCNT sample expands the least comparing to the rest. Raman spectroscopy revealed that the FeCu1%MWCNT nanocomposite contains fewer defects than the FeCu0.25%MWCNT and FeCu0.75%MWCNT, while the MWCNT are in an ordered state. Thermogravimetry has shown that FeCu1%MWCNT is the most thermally stable over the entire temperature range. The 1%MWCNT concentration is the most refined structure, and provides better protection for the FeCu matrix against oxidation.