NANOMETRIC ALNI PRECIPITATION IN A 84.68 WT.% CU- 11.25 WT.%AL- 4.07 WT.%NI SHAPE MEMORY ALLOY

K. Hamouda [a], S.M. Chentouf [b,c], M.Bouabdallah [d], H.Cheniti [b,c], N. Amimer [d]

[a] Département de Construction Mécanique et Productique, Faculté de Génie Mécanique et de Génie des Procédés, Université des Sciences et de la Technologie Houari Boumediene, B.P.32, 16111 El-Alia Bab-Ezzouar, Alger, Algérie.

[b] Département de Science des Matériaux, Faculté de Génie Mécanique et de Génie des Procédés, Université des Sciences et de la Technologie Houari Boumediene, B.P.32, 16111 El-Alia Bab-Ezzouar, Alger, Algérie.

[c] Laboratoire de technologie des matériaux, Université des Sciences et de la Technologie Houari Boumediene, B.P.32, 16111 El-Alia Bab-Ezzouar, Alger, Algérie.

[d] Laboratoire de Génie Sismique et Dynamique des Structures, E.N.P, 10 Avenue Hassen Badi El-Harrach, Alger, Algérie.

[e] Faculté de Génie Mécanique, Ecole de Technologie Supérieure, Montréal-QC, Canada.

A shape memory alloy with a nominal composition of 84.68 wt.% Cu- 11.25 wt.%Al- 4.07 wt.%Ni, has been studied. Polycrystalline specimens have been quenched into water at room temperature, after heat treatment of 15 minutes at a high temperature of 1123 K. Two successive cycles from room temperature to 923 K and inversely have been performed on the no equilibrium samples. The microstructural study presented in this work has been performed using TEM (Transmission Electron Microscopy) analysis, STEM (Scanning Transmission Electron Microscopy) analysis, X-ray diffraction analysis at a variable temperature. Nanometric phase precipitation of AlNi type was observed to appear in this alloy.

Keys words:
Shape memory alloy; Nanometric phase precipitation; Transmission electron microscopy, Scanning transmission electron microscopy; X-ray diffraction; Differential scanning calorimetry

.