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Abstract

$Ni_{1.5}CoCuFeCr_{0.5-x}V_x$ (x = 0.25, 0.5 mol) high entropy alloys (HEAs) have been prepared by mechanical alloying (MA) and spark plasma sintering (SPS). During MA, a small amount of carbon has been introduced from the decomposition of process control agent into the HEAs. Phase composition, microstructure and mechanical properties of the alloys were studied systematically. During MA process, FCC and BCC structured supersaturated solid solutions were formed in the HEA powders. After SPS, BCC phase in the MA state disappeared, while two FCC phases (named FCC1 and FCC2) and minor carbides were observed in the bulk HEAs. The carbides in the