## Accepted Manuscript

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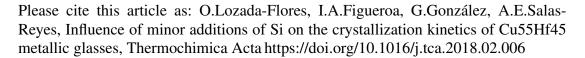
PII: S0040-6031(18)30041-8

DOI: https://doi.org/10.1016/j.tca.2018.02.006

Reference: TCA 77940

To appear in: Thermochimica Acta

Received date: 11-10-2017 Revised date: 14-2-2018 Accepted date: 14-2-2018



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# ACCEPTED MANUSCRIPT

Influence of minor additions of Si on the crystallization kinetics of Cu<sub>55</sub>Hf<sub>45</sub> metallic glasses

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### **Highlights**

- Crystallization kinetics are studied by means of isothermal and nonisothermal heating.
- The small additions of Si shifted the glass transition and crystallization events to higher temperatures.
- The activation energy reached its maximum values at 0.5 at. % of Si and then tended to decrease.

#### **ABSTRACT**

By means of differential scanning calorimetry the effects of minor additions of silicon on the crystallization kinetics of  $Cu_{55-x}Hf_{45}Si_x$  (x = 0, 0.5, 1.0 and 2.0 at. %) alloys were studied. In the non-isothermal crystallization mode, the Kissinger method was used to obtaining the apparent activation energies of glass transition and crystallization. The highest  $E_g$ ,  $E_x$  and  $E_p$  experimental values were found at 0.5 at. % of silicon i.e.  $E_g = 897.20$  kJ/mol,  $E_x = 516.41$  kJ/mol and  $E_p = 490.22$  kJ/mol. In the isothermal mode, the Johnson-Mehl-Avrami model was employed in order to determine the crystallization kinetics, whilst

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