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Supplementary Materials

Is a 2D nanostructured surface capable of changing the corrosion and magnetic properties of an amorphous alloy?

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Preparation method of the amorphous Co75Si15Fe5Cr4.5Al0.5 alloy

The rotating-cylinder method has been applied for the preparation of the amorphous iron-chromium-silicon alloy in the form of a ribbon. The starting materials were Co, Si, Fe, Cr and Al (purity 99.95-99.99%). The amorphous Co75Si15Fe5Cr4.5Al0.5 alloy was prepared in an electric arc furnace in an argon atmosphere with the triple remelting procedure. Impinging a stream of molten alloy on the outer surface of a rotating cylinder in an argon atmosphere was used to convert the obtained crystalline sample to the amorphous state. The ribbon parameters were: width 7–10 mm, thickness 10 μm. The preparation conditions were determined by the necessity to obtain the material in the amorphous state. The amorphous alloy was obtained as a ribbon by high-speed quenching of the melt on a fast-moving substrate. The cooling rate was 106 K/s. The composition of the alloy was controlled by local micro-X-ray spectral analysis using an EVO-50 Zeiss scanning electron microscope EVO-50.

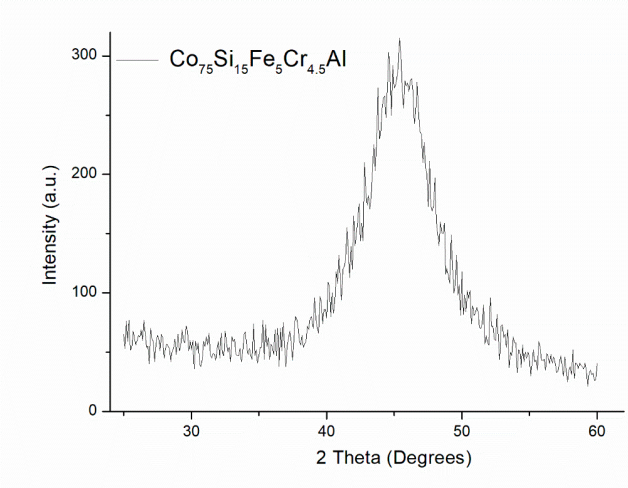

Figure S1. XRD pattern of the alloy sample 2 before annealing (700° C) (amorphous sample).

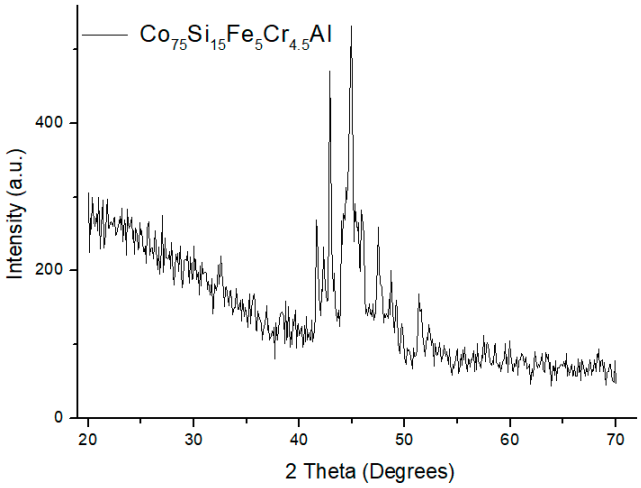

Figure S2. XRR pattern of the alloy sample 2 after annealing (700°C) (the sample underwent crystallization and stratified into two phases).

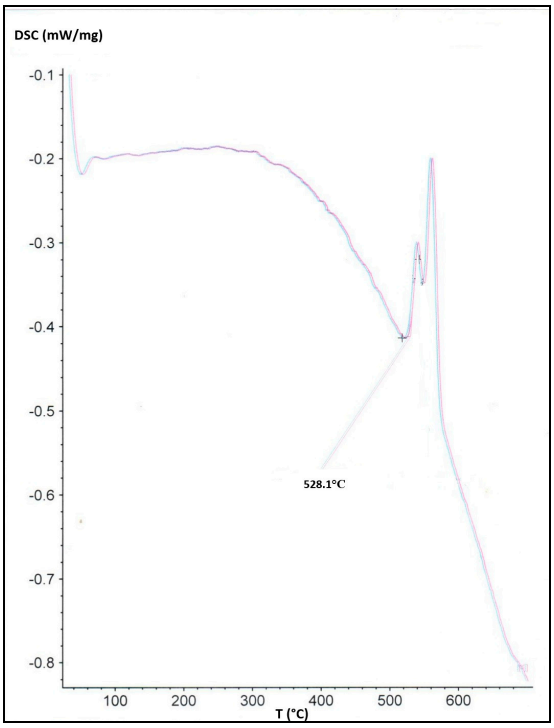

Figure S3. DSC curve for the alloy sample 2. The transition to the two-phase crystalline state is clearly visible.