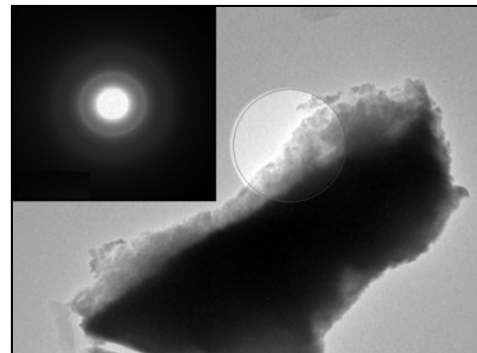
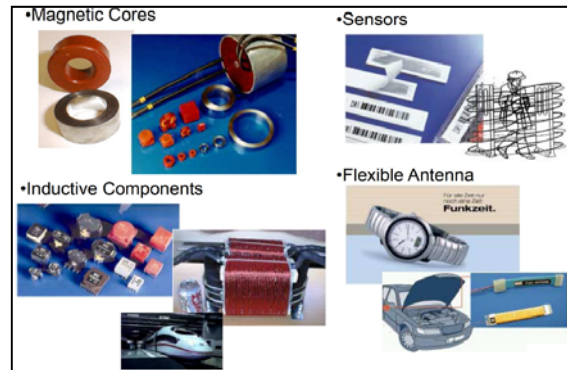


14th September 2018**Amorphization of Co-C Alloys by Mechanical Alloying****Hesham Elmkharram and Alex Aning***Materials Science and Engineering Department, Virginia Tech, Blacksburg, VA***Abstract**

Soft magnetic materials are used in electric motors to enhance the magnetic field produced by the motor windings. The important parameters of interest for these materials include a very low coercivity and high saturation magnetization. In this work the mechanical alloying process is used to produce amorphous Co-C alloys and study the effect of composition on their amorphization and corresponding coercivity and saturation magnification. Amorphization occurs in compositions as low as 5 at% C, even though the thermodynamic driving force for amorphization for this alloy composition, as predicted by the Miedema model, is only -2 kJ/mol. The composition studied ranged between 5 and 40 at% C. The amorphization of the alloys and their properties will be presented and discussed.



Amorphous Co-C alloy

Biography

Mr. Hesham Elmkharram is a PhD candidate in Materials Science and Engineering, Virginia Tech. He received his B.S. degree in electrical engineering from Civil Aviation and Meteorology Higher Institute of Asbiah Tripoli, Libya, and his M.S. degree from Materials Science and Engineering, Virginia Tech. Mr. Elmkharram after obtaining his B.S. degree, he joined the Research and Technological Studies Center / Welding Branch, Tripoli, Libya, as welding engineer, and he received several Diplomas in welding from European Welding Federation (EWF) Mannheim, Germany, International Institute of Welding (IIW) and Istituto Italiano della saldatura (IIS) Genova, Italy. He is currently advised by Dr. Alex Aning and working on the processing and characterizing of cobalt amorphous alloys.

