

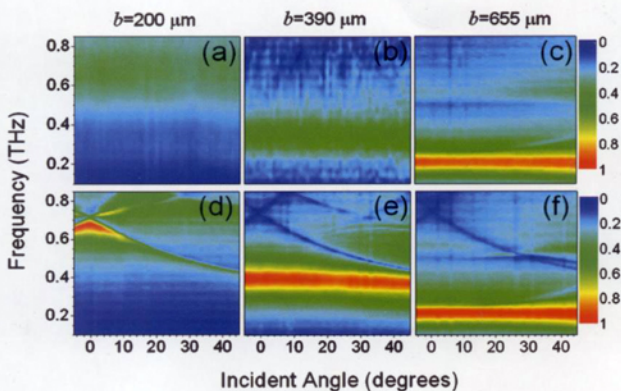
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# 회보

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대전컨벤션뷰로

$\text{Ci}_{88.3}\text{Al}_2\text{Ga}_1\text{P}_{4.35}\text{B}_{4.36}$  KANE Shashank, 이 효진, 김 성백, 정 윤희,  
HYUN S.W.<sup>1</sup>, KIM C.S.<sup>1</sup>, VARGA L.K.<sup>2</sup>(포항공과대학교, <sup>1</sup>국민

대학교, <sup>2</sup>RISSPO.) Bulk amorphous cast iron based alloys will be

presented as cheap soft magnetic materials which can be cast in sheet form up to several mm. We report the structural and magnetic

investigation of  $\text{Ci}_{88.3}\text{Al}_2\text{Ga}_1\text{P}_{4.35}\text{B}_{4.36}$  alloy, by adding minimal amount of glass forming elements (B, P, Al and Ga) to the cast iron

to turn it into a bulk glass and to preserve the high saturation induction. Ribbon of nominal composition  $\text{Ci}_{88.3}\text{Al}_2\text{Ga}_1\text{P}_{4.35}\text{B}_{4.36}$ ,

where  $\text{Ci} = \text{Fe}_{72}\text{Si}_{3.35}\text{C}_{12.3}\text{Mn}_{0.6}$  (about 0.035 mm thick and 4 mm wide) was prepared using planar flow casting on copper wheel with

33 m/s tangential velocity. Thermal stability was examined by DTA measurements performed at a heating rate of 20 K/min. The

crystallization peak temperature ( $T_{x1}$ ) was 513 °C. Specimens were annealed in the inert atmosphere of flowing Ar at 460, 515 and 600

°C for 10 min., which are respectively below, at and above  $T_{x1}$  values. XRD, transmission Mössbauer spectra and hysteresis loops

were measured at room temperature. Temperature dependent magnetization was also measured up to 900 K Annealing at higher temperatures deteriorates the magnetic properties, ascribed to the precipitation of hard magnetic components. It was demonstrated that a

cheap soft magnetic material can be obtained from cast iron with  $B_s$  about 1.5 Tesla having a possible application as transformer sheet replacing the Fe Si electric steel.