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저탄소 2상조직강의 열처리공정 조건에 따른 기계적특성 변화

김훈동†, 박진성[1], 문만빈

현대하이스코 기술연구소; [1]현대제철 기술연구소
(hy720208@hysco.com†)

Recently high strength steel sheets with high formability for automotive parts have been being developed to meet the demands for passenger safety and weight reduction of car body. Among these high strength steels, dual-phase steels are regarded as one of the attractive steels due to their excellent mechanical properties including high strength and ductility. However, to be successfully applied to automotive parts they should be corrosion resistant enough to satisfy the required quality of car maker. This also requires their feasibility for galvannealed production including hot dip galvanizability. In this study has been placed on understanding the effects of heat-treatment(austenizing and isothermal treatment) on the microstructures and mechanical properties of a 0.06C-0.03Si-2.0Mn high strength steel for cold forming. The microstructure and phase distribution were examined with eth aids of SEM, EBSD, TEM etc.. Through the study the production of 590MPa grade DP GA steels with good formability and galvaniability were shown to be possible.

Keywords: high strength steel, dual phase steel sheet, intercritical annealing

D-1

Biocompatibility of oxidized alginate/gelatin/BCP –based hydrogel composites

Nguyen Thi Phuong, Young Ki Min, Hun Mo Yang, Ho Yeon Song, Byong-Teak Lee†

Department of Biomedical Engineering and Materials, School of Medicine, Soonchunhyang University
(lbt@sch.ac.kr†)

In this study, oxidized alginate/gelatin/biphase calcium phosphate (BCP)- based hydrogel composites were fabricated. Alginate sodium was oxidized by periodate. The oxidized product was confirmed by using ^{1}H and ^{13}C NMR spectra. The number average molecular weight (M_n), the average molecular weight (M_w) of the oxidized alginate were determined by Gel Permeation Chromatography (GPC). The hydrogel was formed from the oxidized alginate and gelatin solution via Schift-base reaction. The hydrogel showed a highly porosity by a Scanning Electron Microscope (SEM) and Mercury Intrusion Porosimetry (MIP). Crosslinked density of the gel matrix were assessd by trinitrobenzene sulfonic acid (TNBS) assay that shows a high effect on swelling ratio. Increment of the crosslinked desity resulted in enhancing compressive strength of the hydrogel composite. The cytotoxity of hydrogel was assessed with osteoblast MG-63. The hydrogel composites show a high compatibility. The obtained results showed a potential application for bone regeneration in future.

Keywords: hydrogel, oxidized alginate, gelatin, biphase calcium phosphate