عنوان مقاله:

High frequency capacitively coupled RF plasma discharge effects on the order/disorder structure of PAN-based carbon fiber

محل انتشار:

فصلنامه فیزیک تئوری و کاربردی, دوره 8, شماره 2 (سال: 1393)

تعداد صفحات اصل مقاله: 8

نویسندگان:

U¨mmugu¨l E. Gu¨ngo¨r - *Department of Physics, Middle East Technical University, ۰۶۸۰۰ Ankara, Turkey*

Sinan Bilikmen - *Department of Physics, Middle East Technical University, ۰۶۸۰۰ Ankara, Turkey*

Demiral Akbar - *Advance Technology Research Center, Hacettepe University, Beytepe Campus, Beytepe, ۰۶۸۰۰ Ankara, Turkey*

خلاصه مقاله:

High-resolution confocal Raman microscopywas used to investigate the effects of nitrogen plasma onunsized high strength (HS) PAN-based carbon fiber surfaces.The fibers were treated by a high frequency (40.68MHz) capacitively coupled single RF-PECVD reactorunder different processing conditions (exposure times, RFpowers and gas pressures). It was found that the order/disorder structure of the treated carbon fiber changed withdifferent processing conditions. At low pressures, thedegree of disordered structure increased with HF–RFpower and process time. However, at high pressures, highorderstructure (IG=IT ¼ 84:51%) was observed andalmost no observable structural effects appeared at longtreatment time. Also, the first-order Raman-band peaks (Dand G) of the treated carbon fibers shifted. And, FWHM(wD=wG), intensity (ID=IG) and D-band relative integratedintensity (ID=IT) ratios increased with orderingwhereas they decreased with disordering.

کلمات کلیدی:

لینک ثابت مقاله در پایگاه سیویلیکا: