exhibited the smallest ψ for all arcs, suggesting that in this single fiber the α-form crystals had the highest degree of orientation among the three samples, and the polymeric chains in the crystals were highly oriented along the fiber axis. The crystalline reflection of the β-form crystals appeared in fibers from the two modified collectors where a pair of new equatorial arcs were observed in both 4b’ and 4c’, which are assigned to the β-form crystal plane. Since the β-form crystal structure is a strain-induced paracrystalline structure, this observation indicates that the two modified collectors indeed introduced extra stretching forces on the fibers which are strong enough to stretch the polymer chains to an essentially fully extended form. It is also noted that the β-form arcs always had a small central angle of 8°, suggesting a high orientation of the molecular chains in the β-crystals along the fiber axis under different collection conditions.

[000155] For each of the three SAED patterns, the intensity profile along the equatorial line was plotted against the scattering vector (1/*d*, reciprocal of space distance). In order to eliminate the influence of nonstructure-related factors, such as electron beam conditions and photorecording conditions, the background gray values for all three SAED patterns were equalized before analysis. The baseline was corrected by fitting the background for each of the profiles.

[000156] The following observations were made from these intensity profiles, first, from left to right, the intensities of the α(020) and α(110) peaks both decreased while the intensity of the β peak increased, indicating a decrease in the α-crystal structure content and a correlated increase in the β-crystal structure content. These observations indicate that the stretching forces from the insulated gap, which are caused by the electrostatic attraction between the positively charged fibers and the negatively charged gap edges and the electrostatic repulsion between the residual positive charges on each fiber, are significantly weaker than those from the rotary disk. In addition, the correlated increase of the β-crystal content along with the decrease of