Presence of an ultra high molecular weight (UHMw) fraction in flowing polymer melts is known to facilitate formation of oriented crystalline structures significantly. The UHMw fraction manifests itself as a minor tail in the molar mass distribution and is hardly detectable in the canonical characterization methods. In this study, alternatively, we demonstrate how the nonlinear extensional rheology reveals to be a very sensitive characterization tool for investigating the effect of the UHMw-tail on the structural ordering mechanism. Samples containing a UHMw-tail relative to samples without, exhibit a clear increase in extensional stress that is directly correlated with the crystalline orientation of the quenched samples. Extensional rheology, particularly, in combination with linear creep measurements, thus, enables the conformational evolution of the UHMw-tail to be studied and linked to the enhanced formation of oriented structures.