Abstract Submitted
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Rheology of Vimentin Intermediate Filament Networks[1] HUAYIN WU, Harvard University — A cell's ability to function is highly dependent on its structure and material properties - its capacity to withstand and respond to forces in its environment. The cytoskeleton, which largely determines the cellular mechanical properties, is comprised of biopolymer networks, including filamentous actin, microtubules, and intermediate filaments (IF). Intermediate filaments are much less studied than actin and microtubules. They are much more varied and specialized as well, and have been suggested as being an important platform in mechanotransduction processes in cells. It is thought that they can withstand very high strains and exhibit strain stiffening behavior. We are characterizing vimentin, a type III IF that is found in all vertebrate cells, using rheological techniques. Vimentin elasticity increases upon addition of multivalent cations, which act like molecular crosslinkers. By varying the concentration of cations, we can extract valuable information about how the networks assemble and function.

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