Electronic Supplementary Material (ESI) for Soft Matter.

Subtle changes in crosslinking drive diverse anomalous transport characteristics in actin-microtubule networks

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Supplementary Information

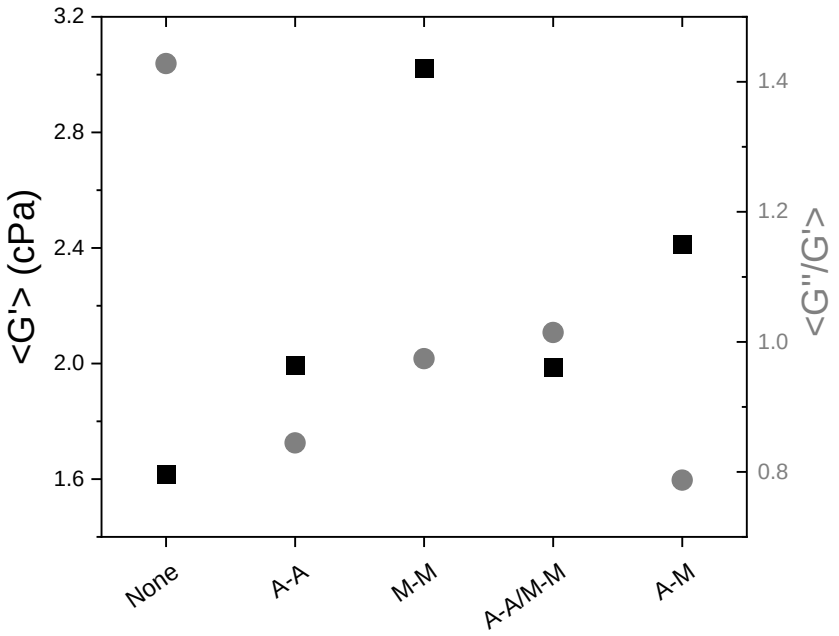

Figure S1. The average storage modulus, $< G' >$, (left axis, black) and the average loss tangent, $< G''/G' >$, (right axis, gray) are plotted versus crosslinking motif. Both are averaged over the frequency regime corresponding to the long-time transport regime (i.e. 3-100 s, 0.06 – 2 rad/s). The data is determined using the generalized Stokes-Einstein relation as described in Methods and following Refs. 56-58 in the manuscript. Generally speaking, more viscoelastic, rigid networks (i.e. higher *G'*) tend to result in more anomalous transport features, while more viscous ones (higher *G"*/*G'*) tend towards normal diffusion. Our results align with this expectation, with all crosslinked composites exhibiting higher <*G'*> and lower < *G"*/*G'*> than the unlinked composite and the variations among crosslinked composites tracking with our other metrics. Error bars representing the standard error are too small to see.

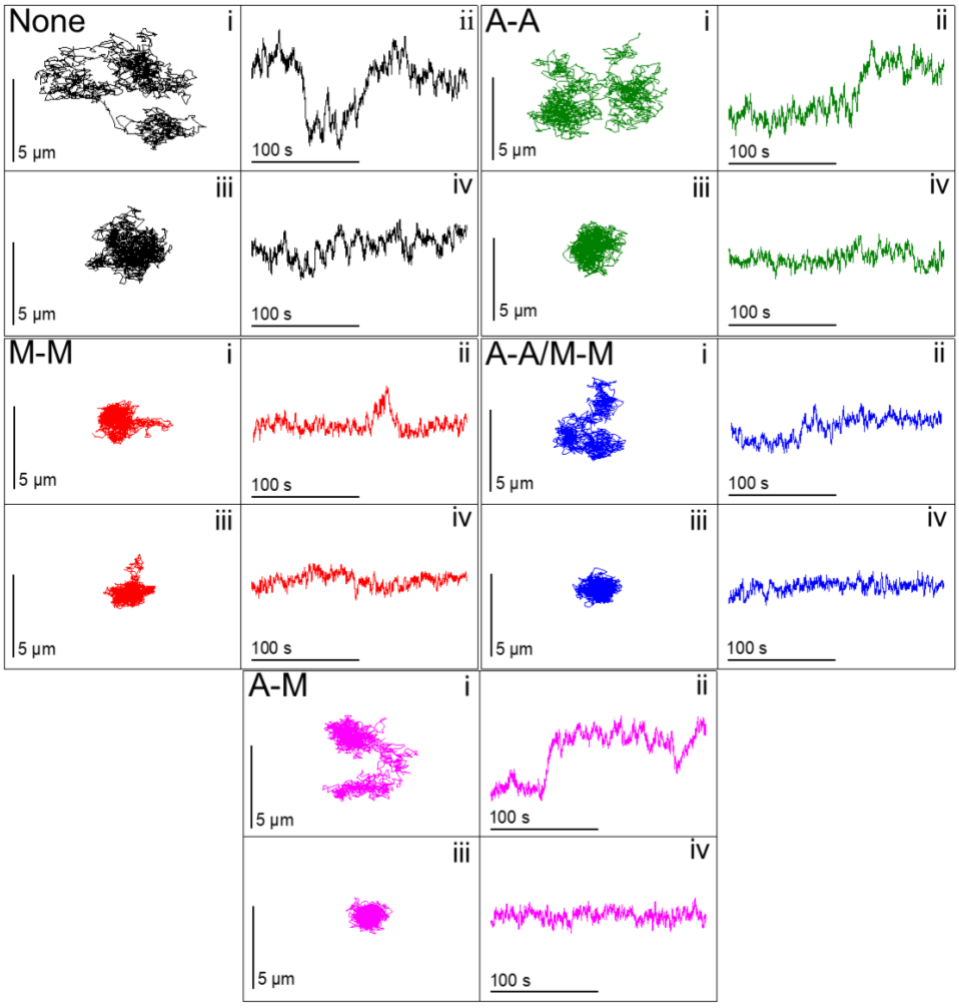

Figure S2. Characteristic particle trajectories show particle caging and hopping. For None, A-A, M-M, and A-A/M-M, (i) and (iii) show the y-position plotted against the x-position, while (ii) and (iv) are the corresponding x-position versus time plots. For A-M, (i) and (iii) show the y-position plotted against the x-position, while (ii) and (iv) are the corresponding y-position versus time plots.

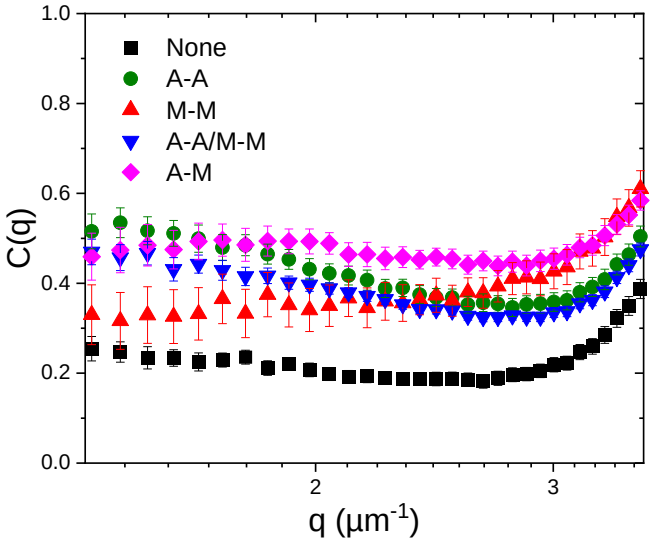

Figure S3. The non-ergodicity parameter C, determined from DDM, is largely independent of wave vector q. The non-ergodicity parameter C, obtained via DDM analysis, is plotted against the wave vector q. This range of q values shown is based on our ability to fit the intermediate scattering functions to the stretched exponential function provided in the methods section. Error bars represent the standard error of values computed for random subsets of the ROIs analyzed.