Catalysis of association in diffusive encounters is the chief parameter regulating MCAK's microtubule depolymerase activity

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Supplementary Table 1:

Table S1: Michaelis-Menten fit of microtubule depolymerization data.

	V_{max}	$K_{1/2}$
	(μm/min)	nM
MCAK(FL)	0.50 ±0.02	4.3 ±0.4
MCAK(FL-NN)	0.31 ±0.08	118 ±43
MCAK(Mono)	7.3 ±0.5	65 ±6
MCAK(Mono-NN)	1.34 ±0.14	76 ±11

Table S1. Computed parameters for Michaelis-Menten fit ($V = V_{max}\cdot[C_m]/(K_{1/2}+[C_m])$) to the depolymerization rate data. V_{max} is the maximal depolymerization rate at saturating MCAK concentrations. $K_{1/2}$ is the concentration required to achieve half-maximal depolymerization rates.

Supplementary Figure 1:

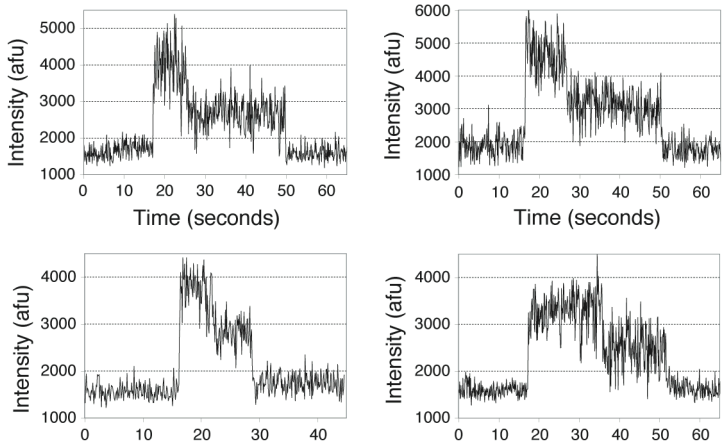

Figure S1. Two-step bleach profile of single MCAK molecules. Four individual examples of dimeric EGFP labeled MCAK(FL), each undergoing two distinct photobleach events. Each trace represents the measured fluorescence intensity (in arbitrary fluorescence units) of a single molecule at time points recorded every 0.1 seconds.

Supplementary Figure 2:

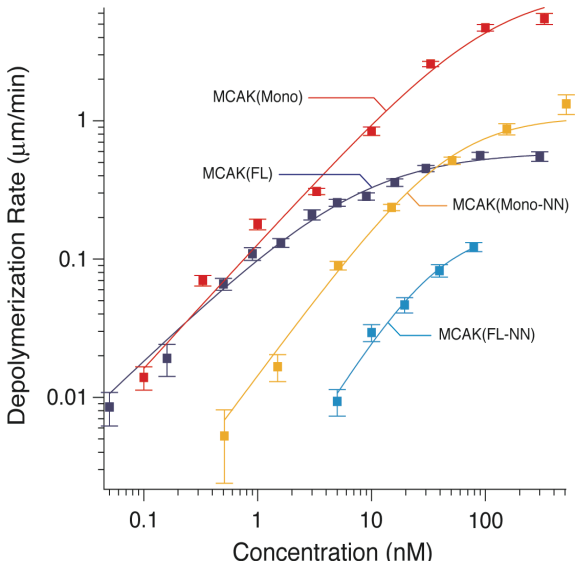

Figure S2. MCAK is not cooperative. The same data shown in Figure 1 is fit to the Hill equation in order to determine if the protein exhibits cooperative behavior. Values of n in the Hill equation indicate the existence of cooperativity as follows: $n > 1$ implies positive cooperativity, $n < 1$ implies negative cooperativity, and $n \cong 1$ implies no cooperativity. The Hill equation fits shown above yield $n = 0.8$ for MCAK(FL), $n = 1.3$ for MCAK(FL-NN), $n = 0.9$ for MCAK(Mono), and $n = 1.1$ for MCAK(Mono-NN). The fact that all of these n values are very close to 1 indicates that MCAK does not act cooperatively.