



## **Critical superparamagnetic/single-domain grain-sizes in interacting magnetite particles: implications for magnetosomes.**

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The blocking volume for the single domain (SD) magnetic state has been calculated as a function of grain elongation and separation for chains of identical magnetite grains. The inclusion of magnetic interactions was found to decrease the blocking volume, increasing the range of stable SD behavior. On combining the results with previously published calculations for the SD to multidomain threshold size in chains of magnetite, it is seen that interactions significantly increase the stable SD range. It is argued that chains of interacting magnetosomes found in magnetotactic bacteria have utilized this effect to improve magnetotaxis.