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Curie temperature reduction in SiO_2-coated ultrafine Fe_3O_4 nanoparticles: Quantitative agreement with a finite-size scaling law WEI WU, JUN WANG, FAN ZHAO, Ningbo University, GUO-MENG ZHAO, California State University, Los Angeles — We report high-temperature magnetic measurements for SiO_2-coated ultrafine Fe_3O_4 nanoparticles. The Curie temperatures of the ultrafine Fe_3O_4 nanoparticles are significantly reduced and follow a finite-size scaling law predicted from Monte Carlo simulations. Our current result provides the first quantitative confirmation of the finite-size scaling law for quasi-zero-dimensional magnetic systems.

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