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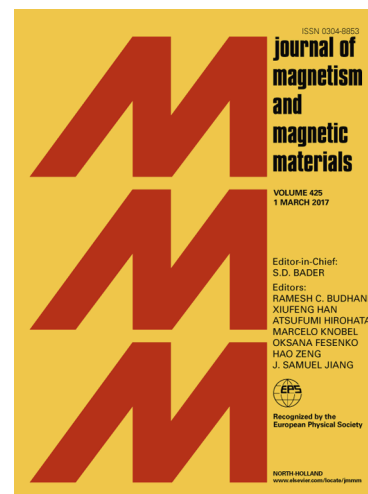
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Defect-induced room-temperature ferromagnetism in single-walled carbon nanotubes

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Abstract

Room-temperature ferromagnetism in single-walled carbon nanotubes (SWNTs) was observed and investigated in this work. Sizeable magnetization was observed in SWNTs aged in air, further increasing by hydrothermal treatment. The magnetic moment appears to arise from a spin-1 species in the pristine sample and from a spin-3/2 species in the hydrothermally treated samples. The spin-1 state may be attributed to the carbon vacancies, whereas the spin-3/2 state may be attributed to hydrogen adsorbed to the carbon vacancies by the hydrothermal treatment.

Keywords: Single-walled carbon nanotubes; Room-temperature ferromagnetism; Defects

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