Memory interference in stage-2 CoCl$_2$ graphite intercalation

MASATSUGU SUZUKI, ITSUKO SUZUKI, SUNY-Binghamton, MOTOHIRO MATSUURA, Fukui University of Technology, Japan — Memory interference effects of aging behavior in stage-2 CoCl$_2$ GIC ($T_{cu} = 8.9$ K and $T_{cl} = 6.9$ K)$^{1,2}$ have been studied by low frequency ($f = 0.1$ Hz) AC magnetic susceptibility and genuine thermoremanent magnetization experiments. When the system is aged at multiple stop temperatures ($T_s$) for wait times (typically $t_w = 3.0 \times 10^4$ sec) during a zero-field cooling (ZFC) protocol, the AC magnetic susceptibility exhibits multiple aging holes (dips) at the stop temperatures ($T_s < T_{cu}$) on reheating. The depth of the aging hole at $T_s = 6.0$ K is logarithmically proportional to the wait time. The depth of the aging hole (for the same $t_w$) exhibits a local maximum at 6.5 K just below $T_{cl}$. It drastically decreases with increasing temperature and reduces to zero above $T_{cu}$. The genuine thermoremanent magnetization (TRM) measurement also indicates that the memory of the specific spin configurations imprinted at multiple stop temperatures between $T_{cl}$ and $T_{cu}$ for a wait time during the field-cooled (FC) protocol can be retrieved on reheating.


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