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【807】Skyrmion formation in SRO-SIO epitaxial bilayer

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SrRuO₃-SrIrO₃ bilayers have recently attracted attention due to their topological Hall effect (THE) as an evidence of interfacial Dzyaloshinskii–Moriya interaction (DMI), which may lead to the formation of skyrmion phase. We measured THE in a SRO-SIO bilayer at different temperatures between 5K and 100K, and performed MFM in external fields. We observe maze pattern of up/down domains of ~70 nm in size. At various locations domains with the same magnetization touch each other and narrow 360° walls form, which indicates the presence of DMI. In external fields, domains shrink and skyrmions with a diameter of 10-20 nm appear. Our measurements prove that a strong THE can occur even though no skyrmion phase but solely individual skyrmions and bubble domains exist.

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