海外支援プログラム実験終了報告書

2016 年　11 月　日

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中性子散乱課題番号・装置名：16549 ・　SANS-U[C1-2]
実験課題名(*2)中性子小角散乱実験による Sr_2RuO_4 の異常金属状態の研究
利用施設・装置：FRM-II　・　KWS-3
利用期間：2016 年 10 月 25 日～2016 年 11 月 1 日
実験の概要(*3)： Unconventional superconductors have shed light continuously in superconducting field. One of them, Sr_2RuO_4, is a kind of specials because it has been clamed as a spin triplet (S = 1) superconductor even being isostructural of the high-Tc material $La_{2-x}Sr_xCuO_4$. In order to study this potential material, we grew single crystals of Sr_2RuO_4 by floating zone method and tried to observe flux line lattice (FLL) signals by small angle neutron scattering (SANS) technique. The experiment was performed at ultra small angle diffractometer, KWS-3, at Forschungsreaktors München II (FRM II), Germany. In the present work, we have succeeded in observing FLL signals at ultra low magnetic fields. (as low as 8mT) A previous work done by Riseman et al.(Nature (London) 396, 242 (1998)) reported that the system shows square FLL at 20mT. The present results indicate that we might be able to follow a FLL structural transition in Sr2RuO4 and we are now submitting a continuous proposal to KWS-3. Travel expenses to KWS-3 were partially supported by General User Program for Neutron Scattering Experiments, Institute for Solid State Physics, The University of Tokyo (proposal no. 16549), at JRR-3, Japan Atomic Energy Agency, Tokai, Japan. We really appreciate this support since we could not perform this experiment without it.

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(*2) 物性研中性子共同利用で採択された課題名です。

(*3) 簡単な記述で構いません。この報告書の提出をもって、旅費が支給されます。また、実験終了後２ヶ月以内に物性研 ISSP-NSL Database (http://quasi.issp.u-tokyo.ac.jp/db/index.php)から activity report の提出をお願い致します。