

# マイクロ・ケルヴィン温度領域の物性：電子および核

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# 1997 Fiscal Year Final Research Report Summary

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## Solid State Physics in UK Temperatures-electron & nuclear

Research Project

### Project/Area Number

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08304025

### Research Category

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Grant-in-Aid for Scientific Research (A)

### Allocation Type

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Single-year Grants

### Section

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一般

### Research Field

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固体物性Ⅱ(磁性・金属・低温)

### Research Institution

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Kanazawa University

### Principal Investigator

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### Project Period (FY)

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1996 – 1997

### Keywords

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Nuclear Magnetism / Ultra Low Temperature / Heavey electrons / Relaxation Time

## Research Abstract

In 1996, we had meeting twice. We discussed our co-works projects. Then we determined the main project that ultra-low temperature measurements for high quality rare earth compound crystal produced by Prof.Onuki's group.

We will report some results of the project.

1) CeRu<sub>2</sub>Si<sub>2</sub> ; Kanazawa University : The magnetic susceptibility measurements were done for CeRu<sub>2</sub>Si<sub>2</sub> single crystal which is known as the nonmagnetic and nonsuperconducting heavy electron compound. The magnetic susceptibility increases monotonically down to 300mK. The magnetic susceptibility suggests the small magnetic moment <math>\approx 0.02\mu\_B</math>. This results suggests that the crystal is of very good quality.

2) PrIn<sub>3</sub> ; ISSP : PrIn<sub>3</sub> compound is the hyperfine-enhanced nuclear spin system. The nuclear spin ordering was observed at 0.13 mK. From the specific heat and the magnetization measurements, the magnetic spin structure was estimated.

3) PrCu<sub>6</sub> ; Osaka City University : The hyperfine-enhanced nuclear spin system PrCu<sub>6</sub> orders at 2.2mK. The domain structure was observed. This is the first observation of the domain structure of nuclear spin system in a laboratory frame.

## Research Products (12 results)

All Other

All Publications (12 results)

- [Publications] H.Ishii: "Relaxation of exchange-coupled nuclear spins under quadrupole interaction" Czech,J.Phys.46,S2. 2219-2220 (1996) ▼
- [Publications] K.Akashi: "Nuclear susceptibility near T<sub>c</sub> in a Van Vleck PrCu<sub>6</sub>." Czech,J.Phys.46,S1. 2211-2212 (1996) ▼
- [Publications] H.Ishida: "Low Temperature Heat-Capacity Anomalies in 2-D Solid<sup>3</sup>He" Phys,Rev.Letters. 79. 3451-3454 (1997) ▼
- [Publications] T.Mamiya: "Specific Heat Anomaly in Solid<sup>3</sup>He due to Vacancy New" J.Low Temp.Phys.110. 109-114 (1998) ▼
- [Publications] Yoshihiro Koike: "Magnetic Susceptibility of Sc Single Crystal" J.Low Temp.Phys.107.1/2. 197-208 (1997) ▼
- [Publications] H.Suzuki: "Nuclear Spin order of scandium" Czech,J.Phys.46,S4. 2183-2184 (1996) ▼
- [Publications] H.Ishii and A.Oguri: "Relaxation of exchange-coupled nuclear spins under quadrupole interaction" Czech.J.Phys.46 S2. 2219-2220 (1996) ▼
- [Publications] K.Akashi, K.Kawabata, A.Matsubara, O.Ishikawa, T.Hata, K.Kodama and Y.Onuki: "Nuclear Susceptibility near T<sub>c</sub> in a Van Vleck Paramagnet PrCu<sub>6</sub>" Czech.J.Phys.46 S1. 2211-2212 (1996) ▼
- [Publications] K.Ishida, m.Morishita, K.Yawata and H.Fukuyama: "Low Temperature Heat-Capacity Anomalies in Two-Dimensional Solid <sup>3</sup>He" Phys.Rev.Lett.79. 3451-3454 (1997) ▼
- [Publications] T.Mamiya et al.: "Specific Heat Anomaly in Solid <sup>3</sup>He due to Vacancy wave" J.Low.Temp.Phys.110. 109-208 (1998) ▼
- [Publications] Y.Koike and H.Suzuki: "Magnetic Susceptibility of Sc Single Crystal" Low Temp.Phys.107. 197-208 (1997) ▼
- [Publications] H.Suzuki, T.Koike, Y.Karaki, M.Kubota and H.Ishimoto: "Nuclear spin order of scandium" czech.J.Phys.46 S4. 2183-2184 (1996) ▼

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