

High Pressure Workshop



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Development of Muon Spin Relaxation Measurement under High Pressure at J-PARC and Application to Study of Organic Magnets

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The muon is a useful elementary particle for probing materials. By using accelerator, spin polarized muons can be implanted into a sample, and depolarization of muon spin is detected at the outside by observing muon decay positron or electron. This technique is known as muon spin rotation, relaxation and resonance (μ SR). For μ SR measurements, high pressure is also a crucial experimental condition and is often used to investigate a material property. However, at the pulsed muon facility, the beam size is larger than the other continuous ones, and only a few examples of high pressure μ SR apparatus are found at the pulsed muon facility. We have been developing the high pressure μ SR technique at the Muon Experimental Facility (MUSE), Japan Proton Accelerator Research Complex (J-PARC). The intense pulsed muons at J-PARC are useful because we can measure long-time muon spin relaxation or synchronize with external pulse conditions. In my presentation, I will report on the current status of our pulsed μ SR measurements under high pressure, up to 1.5 GPa, at the J-PARC MUSE facility. Additionally, we will present the recent application of high-pressure μ SR to study the organic magnet λ -(BEDSe-TTF)₂GaCl₄ under pressures up to 1.2 GPa at J-PARC.

[1] S.Saito, W. Higemoto et al., JPS-CP, in press

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