Contribution ID: **109** Type: **Oral Presentation**

# Lithium-rich very metal-poor stars discovered with LAMOST and Subaru

*Tuesday, 27 June 2017 10:45 (20 minutes)*

Lithium is a unique element that is produced in the Big Bang nucleosynthesis but is destroyed by nuclear reactions inside stars. As a result, almost constant lithium abundance is found in unevolved main-sequence metal-poor stars, although the value is systematically lower than that expected from standard Big Bang nucleosynthesis models, whereas lithium abundances of red giants are more than one order of magnitudes lower than those of unevolved stars. There are, however, a small fraction of metal-poor stars that show extremely high lithium abundances, which is not explained by standard stellar evolution models. We have discovered 12 new very metal-poor stars that have enhancement of lithium by more than 10 times compared with typical metal-poor stars at similar evolutionary stages by the large-scale spectroscopic survey with LAMOST and the follow-up high-resolution spectroscopy with the Subaru Telescope. The sample shows a wide distribution of evolutionary stages from subgiants to red giants with the metallicity of -3.3<[Fe/H]<-1.6. The chemical abundance ratios of other elements have been obtained by our spectroscopic study, and estimates of the binary frequency by radial velocity monitoring is ongoing. The observational results provide very new constraints on the scenarios to explain lithium-rich metal-poor stars, such as extra mixing during the evolution along the red giant branch, mass-transfer from a companion AGB star, and engulfment of planet-like objects. These explanations are very unlikely for at least some of lithium-rich objects in our sample, suggesting a new mechanism that enhances lithium during the low-mass star evolution.

**Presenter:** AOKI, Wako

**Session Classification:** Session 1 (Chair: Y. S. Lee)