



IBS Center for Molecular Spectroscopy and Dynamics

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# Seminar

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- **SPEAKER**

Prof. Keunhong Jeong (Korea Military Academy)

- **TITLE**

Hyperpolarization Researches with NV center,  $^{129}\text{Xe}$  and Parahydrogen

- **ABSTRACT**

NMR (Nuclear Magnetic Resonance) has been harnessed as the key spectroscopic technology in both industry and science field. However, the high cost and effort of implementation and maintenance of NMR/MRI (Magnetic Resonance Imaging) due to the difficulty in maintaining strong magnetic field and cryogenic condition were the problematic even those great advantages. The best way to overcome these drawbacks is to take advantage of hyperpolarization effect that leads to the beyond the Boltzmann distribution, allowing lowered demand for strong magnetic field. Dynamic nuclear polarization (DNP) has been one of the most widely used method to induce hyperpolarization on target materials. However, DNP exhibits low efficiency and poor stability due to its harsh condition such as strong magnetic field and cryogenic condition. Therefore, there has been much efforts to induce hyperpolarization on targets using safe materials at room temperature. Several promising tools (NV Center in diamond,  $^{129}\text{Xe}$ , and parahydrogen) that can induce hyperpolarization in normal condition will be introduced and discussed. Especially, parahydrogen system is currently set up in Korea Military Academy and I will share some interesting results from it.

- **DATE AND VENUE**

March 27, 2019 (Wednesday, 5:00 - 6:00 pm)

Seminar Room A (116), KU R&D Center

- **LANGUAGE**

Korean

- **INVITED BY**

Professor Kyungwon Kwak