

The 230th MANA Special Seminar



Chemical modification of the surface electronic properties of III-V semiconductors and optoelectronic devices

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A new approach to control chemically the surface atomic structure and electronic properties of III-V compound semiconductors is developed. This approach is based on the adsorption of anionic adsorbates (such as HS⁻ ions), which chemical properties are modified prior to adsorption through the solvation with different solvents (water, alcohols). The mechanism of interaction of such solvated ions with the semiconductor surface at a semiconductor/solution interface could depend on solvent solvating the ion and thus the properties of the semiconductor surface obtained after adsorption should also depend on the solvent. This idea is supported by quantum-chemical calculations and experimentally. In particular, this approach enables modification of the ionization energy of the semiconductor in a wide range. Also, essential reduction of the non-radiative surface recombination velocity is achieved, which is applied for device performance modification.

Venue: Seminar Room #431-432, 4F, MANA Bldg., Namiki

Date: **November 10th (THU)** **Time:** **15:30-16:15**

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