The 154th MANA Special Seminar

Highly sensitive low cost silver sulphide-based ion sensors for analytical studies

Chair: Dr. Lok Kumar Shrestha (ICYS-MANA Researcher)

Prof. Raja Ram Pradhananga

(Central Department of Chemistry, Tribhuvan University, Nepal)

In this talk, fabrication, characterization, and application of low cost home-made ion sensors will be discussed. Ion sensor materials are prepared by chemical method and characterized by XRD, SEM, and electrochemical measurements. The X-ray diffraction study of the Ag2S-AgI electrode material shows the presence of Ag3SI, Ag2S, and AgI crystalline phase. The electrode surface becomes smoother and lustrous with increasing mole fraction of Ag2S in the system. All the electrodes responded in the Nernstian manner with the slope of ~ 60 mV per decade change in iodide ion concentration in the electrochemical measurements. Ion sensors prepared from Ag2S/AgX (X = halides) are sensitive to silver, sulphide, and corresponding halide ions in ppm level. The sensors have been successfully used for the quantitative estimation of thiamine in vitamin B in the pharmaceutical preparations, hydrogen sulphide in the cigarette smoke, and solubility product of sparingly soluble silver salts. For developing countries like Nepal, the low cost ion sensors are appealing since the sensors can be fabricated easily from the available materials in the laboratory and their sensitivity and reliability are comparable to the commercial ion sensors.

Venue: **Seminar Room #431, MANA Bldg.**

Date: **July 7th Wednesday** ***Time:*** **15:30-16:15**

NAMIKI Site

Contact: International Center for Materials Nanoarchitectonics (MANA), Nakata (ex. 8806)