

# Microparticle Immunoassay Methods for Early Detection of Ovarian Cancer Using Laser Induced Breakdown Spectroscopy (LIBS)

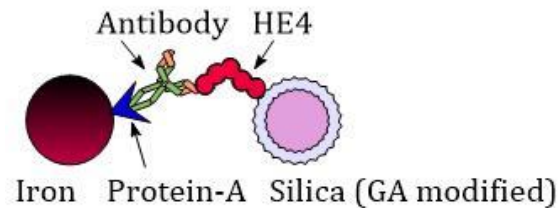
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HE4 ovarian cancer antigen-antibody complex was sandwiched by iron and silica microparticles. Here iron was used to purify the conjugate from the conjugate medium and then silica was used to detect and quantify the HE4.

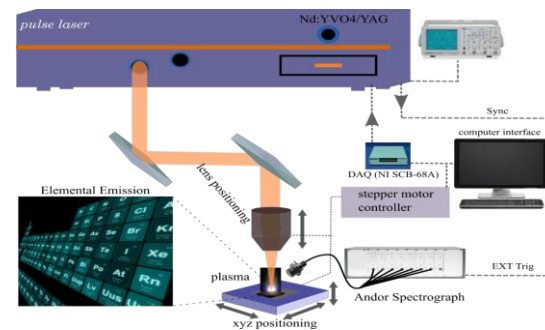
## Methodology

- ❖ Antibody was conjugated on Protein-A pre-modified iron micro particles.
- ❖ HE4 antigen was allowed conjugate with antibody.
- ❖ Glutaraldehyde modified silica micro particles were conjugated to HE4 antigen.
- ❖ The final conjugate was purified through the magnetic separation process.
- ❖ LIBS was employed for the detection of silica particles and quantified using a calibration curve.

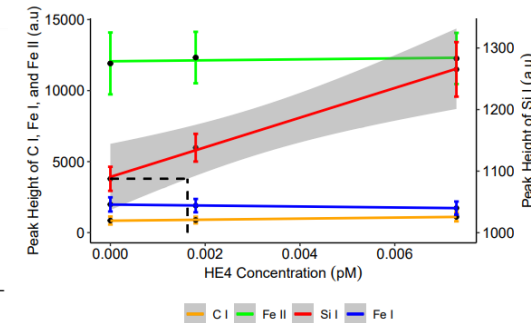
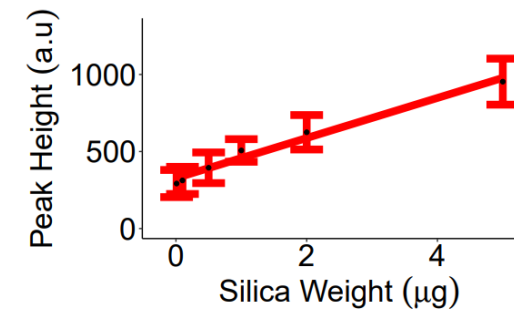
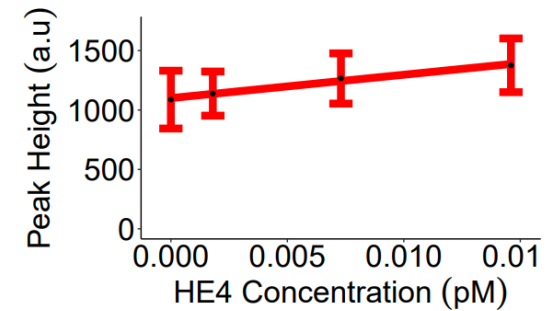
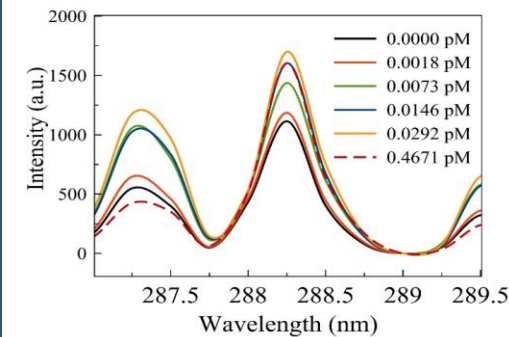
## Conjugate Design



## LIBS SETUP



## Results



- Working region of assay: 0.0- 0.0073 pM.
- Limit of detection (LOD): 0.0016 pM.
- Average binding capacity of silica to HE4: 1.64.