

### Fabrication of Janus Si particle via masking method and application

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Si particles are well known as brief fabrication method and useful properties including easy to functionalization with other functional groups. However, it's not easy to make dual functionality. In this work, control the size of the Si particles and introduce dual functionality as well. Fabricated size controllable particles has amino functional group after brie hydrolysis method. Synthesized materials are spin coated first and covered by PMMA. After cover the particles we use plasma exposure method to etching half of PMMA to make janus condition. We also use Au sputtering as one functional group. Fabricated janus Si particle has dual functional group which is amine group and Au group and we could use click reaction and Au sulfur group to applicate with other bio and chemical structure as well.