

- We can make nano easy -

## Motivation

For nanometer-scale patterning, many kinds of patterning processes have been investigated, including electron beam (EB) lithography and extreme ultraviolet lithography. However, the equipment required for flexible patterning with a reasonable throughput has difficulties in its size and cost. We need fabrication techniques that can be used easily and efficiently.

## Originality

Nanoimprint technology transfers a pattern by indenting a target surface with a mold pattern defined by peaks and valleys. Nanoelectrode lithography uses an electrochemical reaction to transfer the pattern. We can categorize nanoelectrode lithography as chemical nanoimprint. The technique can directly make an oxide mask on the target. This resist-less patterning should decrease the number of process steps. It also can adopt a mold with a pattern defined by difference of conductivity to simplify the mold fabrication process.

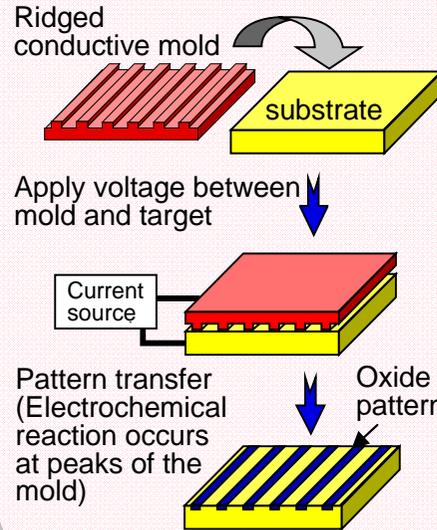
## Impact

With the technique, we can simplify patterning, etching, and mold fabrication process. This gives us nanostructure-devices efficiently. With this technology, you can have a nanostructure on your demand.

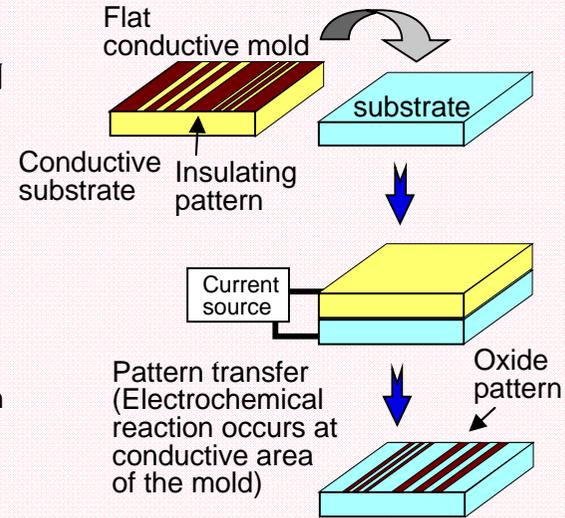


## Nanoelectrode lithography - Chemical nanoimprint -

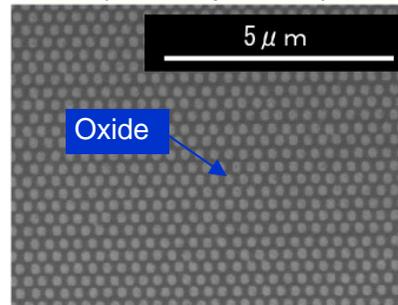
### Ridged conductive mold



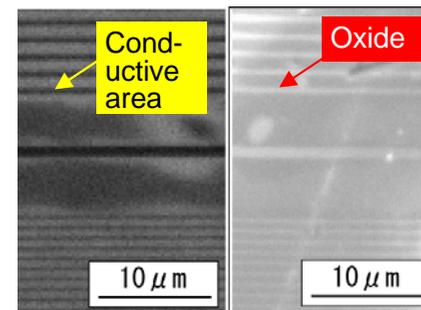
### Flat conductive mold



Si substrate patterned by nanoelectrode lithography (300 nm pitch dot)



Flat conductive mold (left) and transferred pattern (right)



## Nanoimprint lithography - Conventional -

