

LITHOGRAPHIC APPARATUS, METHOD, AND COMPUTER
PROGRAM PRODUCT FOR GENERATING A MASK
PATTERN AND DEVICE MANUFACTURING METHOD
USING SAME

ABSTRACT OF THE DISCLOSURE

Grayscale Optical Proximity Correction device features are added to a mask pattern by convoluting the device features with a two-dimensional correction kernel or two one-dimensional correction kernels to generate grayscale OPC features. The resulting pattern may be used in a projection lithography apparatus having a programmable patterning means that is adapted to generate three or more intensity levels. An iterative process of simulating an aerial image that would be produced by the pattern, comparing the simulation to the desired pattern, and adjusting the OPC features may be used to generate an optimum pattern for projection

Figure 2