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(54) Title: SILANOL-CONTAINING ORGANIC-INORGANIC HYBRID COATINGS FOR HIGH RESOLUTION PATTERNING

(57) Abstract: Silanol-containing organic-inorganic hybrid coatings on semiconductor substrates for forming patterns thereon. The present coatings can be produced by coating of semiconductor substrates with metal and silanol containing polyhydrosilsesquioxane resin solutions. Provided herein is also a method for patterning a metal and silanol containing polyhydrosilsesquioxane coated substrate with radiation of light at a specific wavelength, the method comprising the steps of irradiating a coated substrate along a selected pattern to form an irradiated structure with a region of irradiated coating and a region with un-irradiated coating and selectively developing the irradiated structure to remove a substantial portion of the un-irradiated coating to form a patterned substrate. The invention allows for obtaining a preselected silanol content polyhydrosilsesquioxane resin, and adjustment of the silanol content will make it possible to obtain a highly sensitive coating for application in EUV.