

E-beam induced EUV photomask repair – A perfect match

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1. ABSTRACT

Due to the updated ITRS roadmap EUV might enter the market as a productive solution for the 32 nm node¹. Since the EUV-photomask is used as mirror and no longer as transitive device the severity of different defect types has changed significantly. Furthermore the EUV-photomask material stack is much more complex than the conventional 193nm photomask materials which expand the field of critical defect types even further. In this paper we will show, that “classical” 193 mask repair processes cannot be applied to EUV material. We will show the performance of a new repair process based on a novel ebeam repair platform. Furthermore this process will be applied on real EUV mask defects and the success of these repairs confirmed by wafer prints.

2. KEYWORDS

MeRiT[®] MG 45, MeRiT[®] HR 32, mask repair, defect repair, absorber defect, multilayer defect, electron beam repair, spontaneous etching, passivation