Abstract

OPTICAL NEAR-FIELD METROLOGY

Systems and methods are provided which utilize optical microcavity probes to map wafer topography by near-field interactions therebetween in a manner which complies with high volume metrology requirements. The optical microcavity probes detect features on a wafer by shifts in an interference signal between reference radiation and near-field interactions of radiation in the microcavities and wafer features, such as device features and metrology target features. Various illumination and detection configurations provide quick and sensitive signals which are used to enhance optical metrology measurements with respect to their accuracy and sensitivity. The optical microcavity probes may be scanned at a controlled height and position with respect to the wafer and provide information concerning the spatial relations between device and target features.

Figure 3