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(54) **ELECTRO-OXIDATIVE METAL REMOVAL ACCOMPANIED BY PARTICLE CONTAMINATION MITIGATION IN SEMICONDUCTOR PROCESSING**

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(57) **ABSTRACT**

During electro-oxidative metal removal on a semiconductor substrate, the substrate having a metal layer is anodically biased and the metal is electrochemically dissolved into an electrolyte. Metal particles (e.g., copper particles when the dissolved metal is copper) can inadvertently form on the surface of the substrate during electrochemical metal removal and cause defects during subsequent semiconductor processing. Contamination with such particles can be mitigated by preventing particle formation and/or by dissolution of particles. In one implementation, mitigation involves using an electrolyte that includes an oxidizer, such as hydrogen peroxide, during the electrochemical metal removal. An electrochemical metal removal apparatus in one embodiment has a conduit for introducing an oxidizer to the electrolyte and a sensor for monitoring the concentration of the oxidizer in the electrolyte.