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Remote plasma-assisted deposition of metals onto the surface of nanocrystalline ZnO SERGIO A. LEAL[1], Houston Baptist University, Houston, TX, ANASTASIIA NEMASHKALO, PUSKAR CHAPAGAIN, SHREEDHAR PANT, Texas Christian University, Fort Worth, TX, PHILLIP ALARCON[2], Paschal High School, Fort Worth, TX, YURI M. STRZHEMECHNY, Texas Christian University, Fort Worth, TX — Controllable surface modification of nanoscale ZnO is crucial for many existing and future applications. We investigated the effectiveness of metal deposition using remote O_2/He plasma passing through a metal mesh electrode onto the surface of ZnO nanopowders with an average grain size of 25 nm. Surface stoichiometry was monitored in situ with Auger electron spectroscopy, whereas surface optoelectronic properties were probed; also in situ, using surface photovoltage (SPV) spectroscopy. We observed a strong dependence of surface modification on the distance from the metal electrode. At short distances the metal coverage was reaching tens of percent of one monolayer. Simultaneously we observed a significant improvement of the SPV response pointing to metal-enhanced surface charge dynamics.

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