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Solution-based *in-situ* synthesis and fabrication of ultrasensitive CdSe photoconductors NELSON COATES, LIANG LI, DANIEL MOSES, Physics, University of California, Santa Barbara — Solution-based semiconductor device fabrication offers the advantages of low cost, large area coverage, control of morphology, and simplified doping. Here, we present a novel solution-based *in-situ* synthesis and film fabrication method demonstrated for CdSe films, where both the quantum dot (QD) synthesis and bulk film formation occurs simultaneously on a substrate in ambient atmosphere. The films fabricated using this method exhibit high photoconductive gain while retaining a relatively high signal bandwidth. We will present the synthetic route, as well as our studies of steady-state and transient photoconductivity that elucidate the mechanisms underlying the photoconductive gain and the role of carrier density on the carrier transport

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