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Axially-Resolved Luminescence of Individual ZnSe Nanowires<sup>1</sup> S.K. HARK, JUNPING ZHUANG, The Chinese University of Hong Kong, WAI-NING MEI, University of Nebraska at Omaha — Axially resolved distributions of luminescence intensity and lifetimes along individual ZnSe nanowires were studied using two-photon excited luminescence imaging and time-correlated single photon counting techniques. The nanowires were grown on GaAs substrates via the selfcatalyzed VLS mode. An intense tip, to which a gallium particle is attached, is found for the deep level (DL) emissions via luminescence imaging, while the intensity for the near band edge (NBE) emissions is more uniform. The luminescence decays at all locations of the nanowires are dominated by a fast process at early times, followed by a slow one. In addition, the shape of distribution of the lifetimes along the length of nanowire resembles a flattened letter "U" for the NBE emissions, but it resembles a long tailed letter "L" for the DL emissions. Possible explanations of these results will be discussed.

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