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Nonlinear optical absorption in the blue spectral region by phosphine-substituted oligothiophenes[1] JIANWEI WANG, CHRISTOPHER LAWSON, Department of Physics, University of Alabama at Birmingham, Birmingham, AL 35294, QUN ZHAO, GARY GRAY, Department of Chemistry, University of Alabama at Birmingham, Birmingham, AL 35294 — Organic conjugated materials with large nonlinear optical (NLO) absorption have potential applications in optical computing, optical switching and optical power limiting. However, nearly all investigations have focused on the green, red and near-infrared regions of the optical spectrum. In contrast, organic conjugated materials exhibiting NLO absorption in the blue region have not been reported. Phosphine-substituted oligothiophenes are among the few materials that exhibit nonlinear optical absorption in the blue spectral region. Three families of these materials have been investigated, and the best blue absorber at 430 nm is 5,5'-bis(diphenylphosphine selenide)-2,2'-bithiophene.

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