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Investigations of individual quantum dots of InAsP in InP nanowires MATS-ERIK PISTOL, NIKLAS SKÖLD, KIMBERLEY DICK, Lund University, CRAIG PRYOR, University of Iowa, JACOB WAGNER, Danish Technical University, LARS SAMUELSON, Lund University — We have grown InP quantum wires containing InAsP quantum dots by metal-organic vapor phase epitaxy. These structures were investigated by transmission electron microscop and photoluminescence spectroscopy and were modelled by six-band k.p-theory. We observe sharp emission lines from excitons, bi-excitons and tri-excitons. When we have observe tri-exciton emission we observe lines originating from the s-shell as well as from the p-shell. By changing the size of the dots we observe clear confinement effects. The wires have a wurtzite structure but were modelled (by necessity) using zinc-blende parameters. From the deviaiton between the theory and the experiments we can deduce rough values of the band-gap of the wurtzite InAs as well as the electron effective mass of wurtzite InAs.

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