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Synthesis and Growth Mechanism Investigation for Black Phosphorus XIAOYUAN LIU, SHENG LI, Department of Physics, The University of Texas at Dallas, Richardson, TX 75080, QINGKAI YU, Ingram School of Engineering, Texas State University at San Marcos, San Marcos, TX 78666, BING LV, Department of Physics, The University of Texas at Dallas, Richardson, TX 75080, BING LV'S TEAM, QINGKAI YU COLLABORATION — The recent successful synthesis of black phosphorus (BP) at lower pressure rather than historically high pressure Bridgman method through mineralizer-assisted reactions, and the prevailing properties that BP displayed, have warranted some more detail investigation for the growth mechanism of BP, as well as optimization of the synthetic routes for better quality and higher yield. We therefore carried out systematical studies to unravel the role of those mineralization additives during the BP growth, tentatively suggested a likely growth mechanism, and more importantly, pointed out some directions for further growth of BP with controllable thickness.

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