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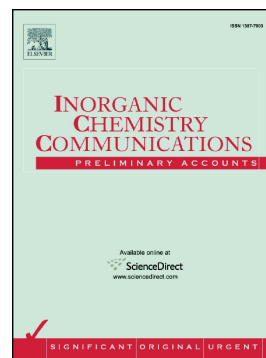
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Brookite and Anatase nanomaterial polymorphs of TiO₂ synthesized from TiCl₃.J.H. Leal[‡], Y. Cantu[‡], D.F. Gonzalez, and J.G. Parsons^{‡*}

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ABSTRACT: Synthesis of anatase and brookite was achieved under mild conditions in aqueous solution. In addition, mixtures of brookite and rutile as well as mixtures of the anatase and rutile polymorphs were observed at different temperatures. It was observed that temperatures above 80°C produced anatase and brookite phases, exclusively. The samples prepared using the acetate synthesis showed on average bandgap around 2.95-3.0 eV and brookite was observed. Whereas the samples prepared using the sulfate synthesis showed and bandgap from 3.1 to 3.2 eV and anatase was observed. In addition, the average grain size of the brookite and anatase phase synthesized at 100 °C were 9.7 and 12 nm, respectively, as determined from XRD

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