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**Strange conductivity of strontium titanate<sup>1</sup>**

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Strontium titanate is a complex oxide with a range of interesting properties. Samples annealed at 1200C show persistent photoconductivity at room temperature. When irradiated with sub-gap light, the resistivity drops significantly. The increased conductivity persists for days with negligible decay. This unusual effect is attributed to the excitation of an electron from an acceptor defect into the conduction band. A large barrier for recapture prevents electrons from returning to the defect level. The defect is tentatively attributed to a titanium vacancy complex. Recent work suggests that optimized annealing conditions result in weakly p-type material (in the dark), consistent with the idea that acceptors are created. The measured room-temperature hole mobilities (100-1000 cm<sup>2</sup>/Vs) are surprisingly high. It is possible that this anomalous conductivity is due to a p-type surface layer rather than bulk doping. The results of Seebeck measurements, which discriminate between electron versus hole conduction by applying a thermal gradient, will be discussed.

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