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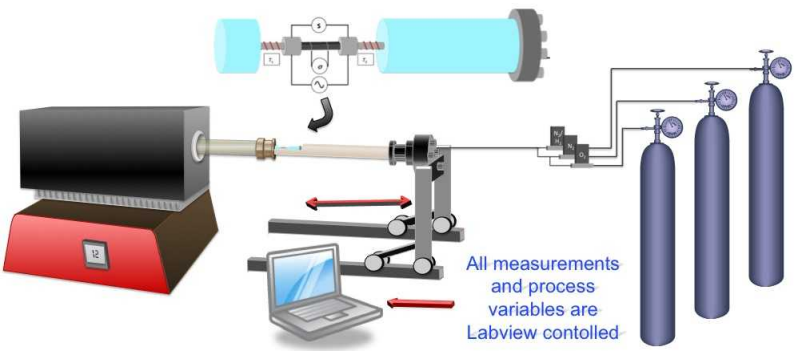

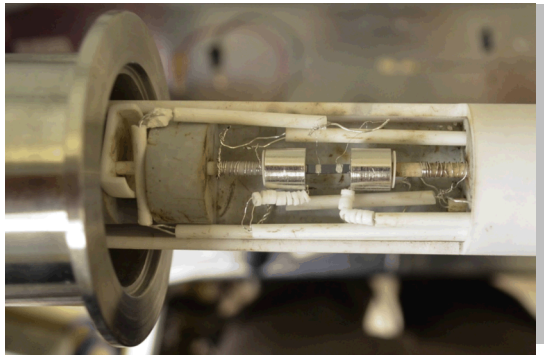

Transport Properties of $SrTiO_3$ Thermoelectric Oxides Under Controlled pO_2

Harlan J. Brown-Shaklee, Peter A. Sharma, and Jon F. Ihlefeld

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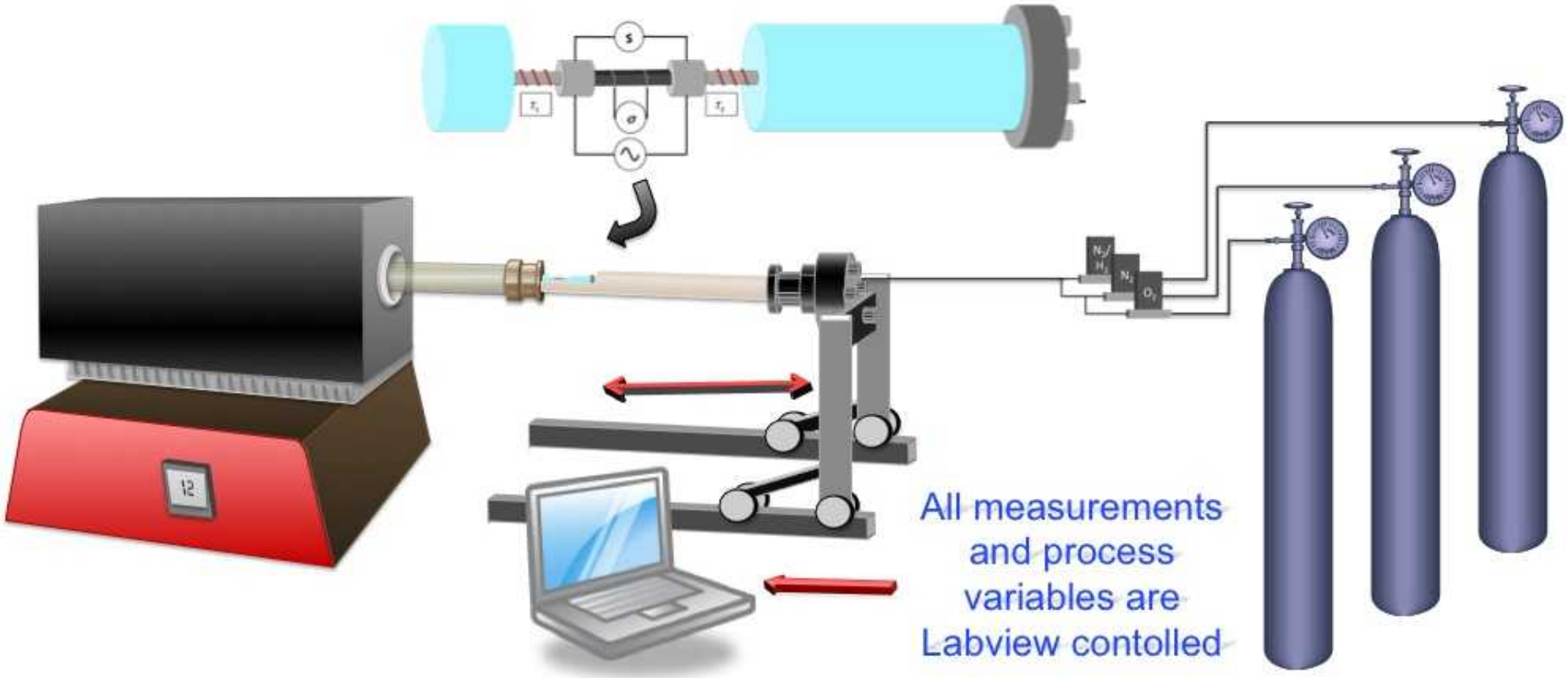
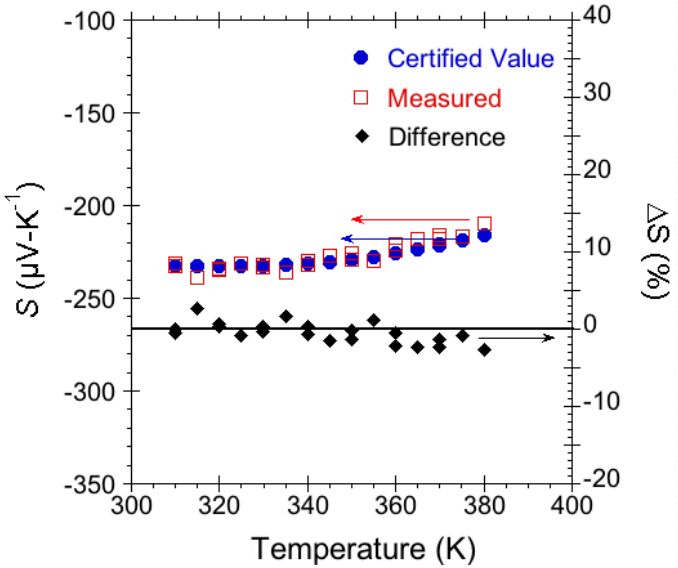
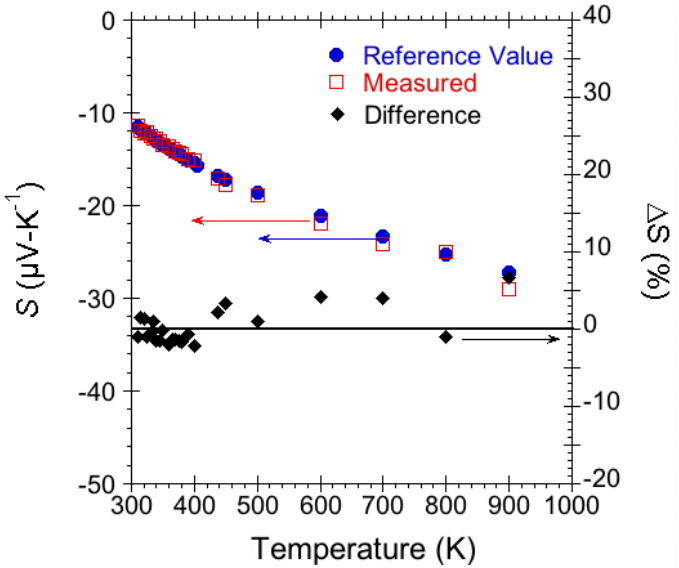
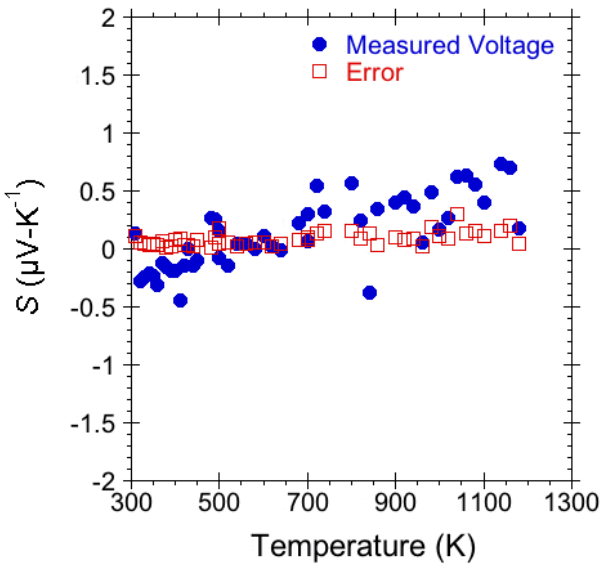
We constructed a custom thermoelectric measurement system to evaluate pO_2 dependent transport properties

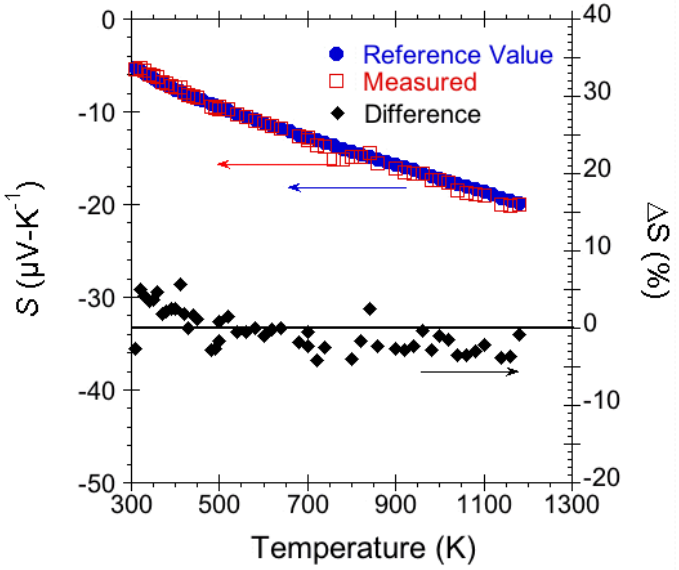


High quality measurements can be produced from 300-1300K under controlled pO_2

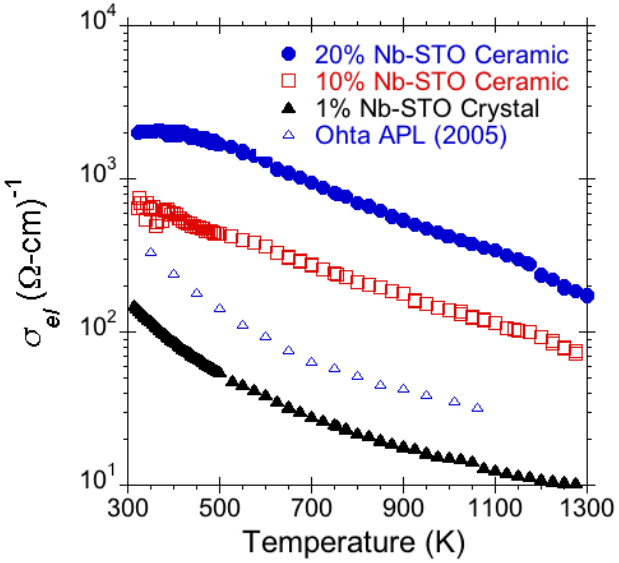




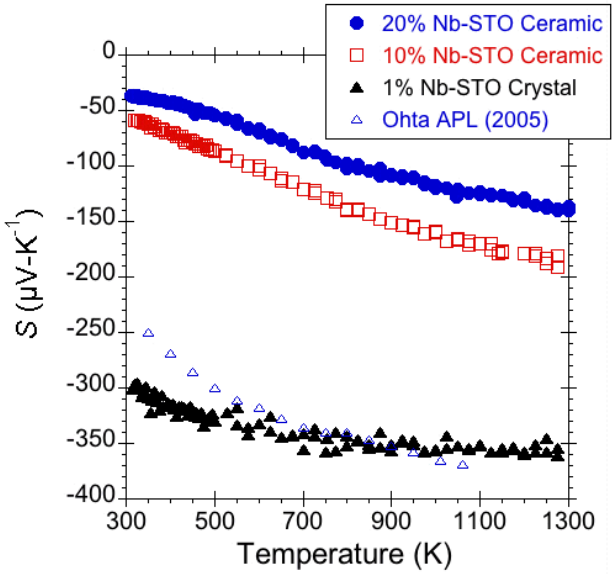


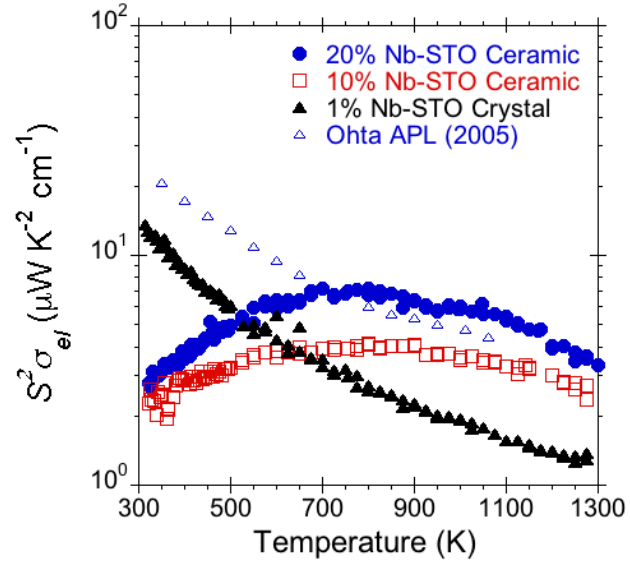


Thermopower and electrical conductivity of $Nb:SrTiO_3$ were evaluated at

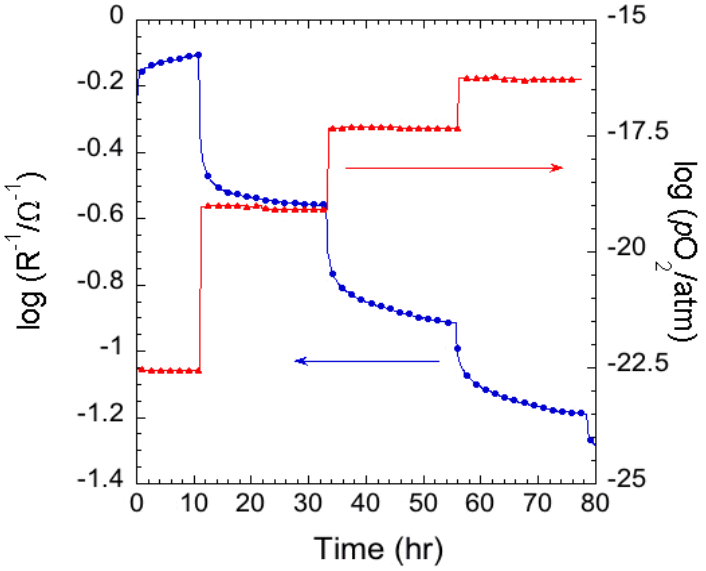


Measurements from 300-1300K occur over ~24 hours

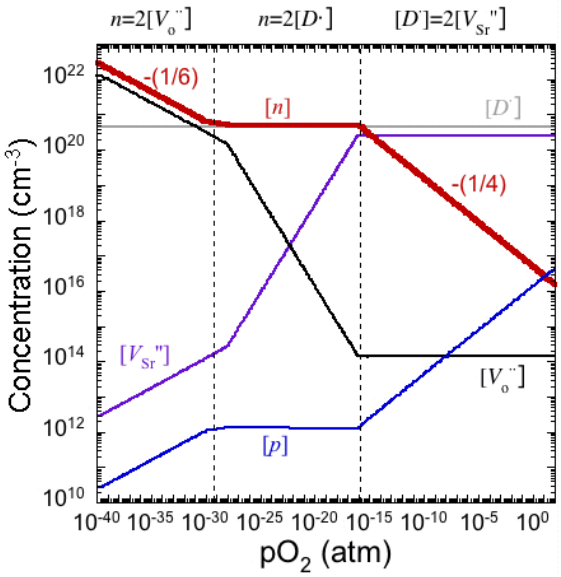


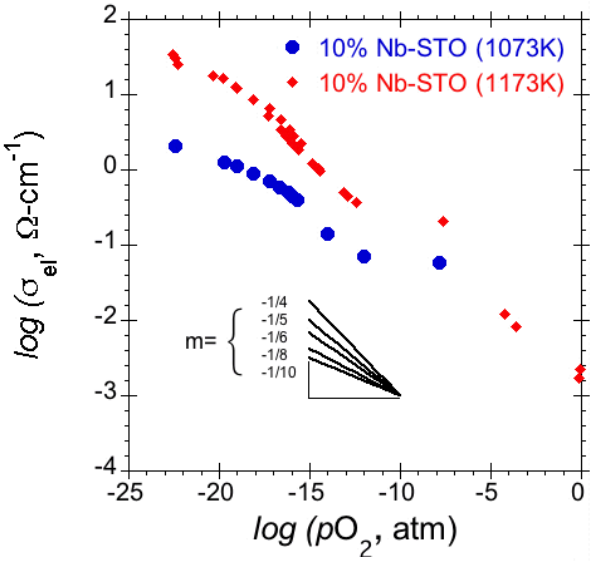


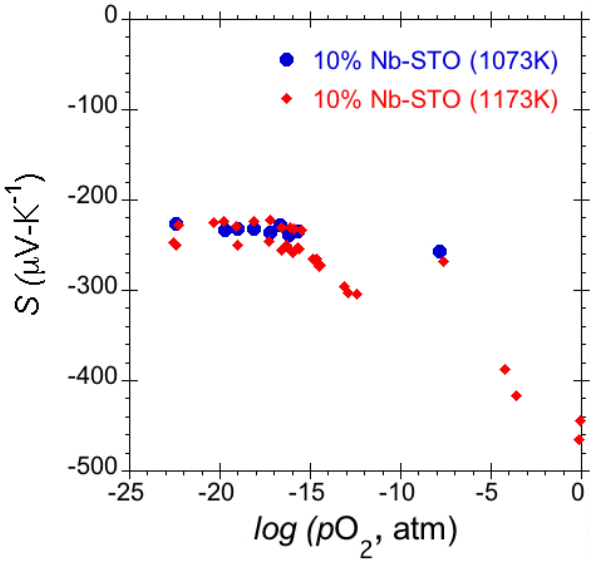
The sample electrical properties change with changes in measurement pO_2 and temperature

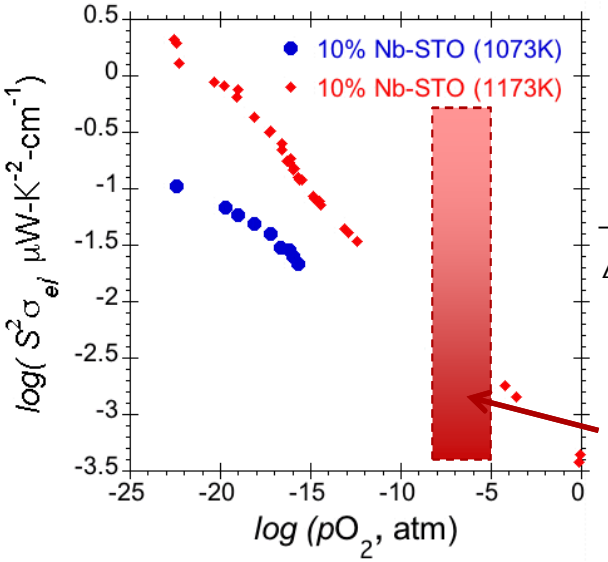


Power factor changed by >1000x with only changes in measurement pO_2 (10^0-10^{-23}atm)









$$\frac{\Delta PF}{\Delta pO_2} > 1,000x$$

Common measurement range