



Figure 6. (a) Calibration of goniometer thermocouple reading, "measured temperature" vs. local sample temperature, "true temperature," assessed by a variety of techniques. (b) Comparison of measured dislocation velocities (in Å/s) with electron beam on and off for a 140 nm Ge<sub>0.14</sub>Si<sub>0.86</sub> layer buried beneath a Si cap. (c) finite element analysis calculations of relaxation in a wedge-shaped TEM foil. Calculations are shown, for different epilayer thicknesses with a lattice mismatch strain of 0.01, of the remaining stress parallel to the foil edge ( $\sigma_p$ ), normalized to the stress in an unthinned sample, vs. the remaining substrate thickness,  $h_{si}$ . The wedge angle is 11.3°.

neously to our *in situ* samples, including the combined heating/electrical holder previously described, and a recent goniometer design in which we have incorporated the ability to simultaneously heat, apply an electric field to, and optically pump a sample.<sup>29</sup> We hope that such studies will open new avenues for understanding the operation and reliability of electronic devices.

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