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A new uniaxial strain measurement technique for improved strain homogeneity MARK BARBER, University of St Andrews, CLIFFORD HICKS, Max Planck Institute for Chemical Physics of Solids, STEPHEN EDKINS, DANIEL BRODSKY, University of St Andrews, ANDREW MACKENZIE, Max Planck Institute for Chemical Physics of Solids — Response to uniaxial distortion can be a powerful probe of the electronic properties of a solid. However, it is not a very commonly applied technique, chiefly because of the technical challenges of obtaining good strain homogeneity while applying significant pressures. In typical uniaxial pressure measurements, thin and wide samples are clamped between two anvils. Our approach uses a different, easier technique: cutting the sample into a long, narrow bar, and securing its two ends with epoxy across a vice. We have already demonstrated this technique with measurements on Sr_2RuO_4. Here we explain the details of this technique and by using finite element simulations present the guidelines (readily achievable in experiments) that need to be followed in order to achieve high strain homogeneity.

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