























Fig. 6. Piezoresponse force microscopy measurement showing that the as-grown epitaxial BMO/STO(111) heterostructure has the polarization oriented downward (bright contrast). (a) surface topography, and (b) PFM image. The regions/grains that do not show a response (grey contrast) are either oriented in-plane, or represent the minor MO phase. (c) Out-of-plane PFM hysteresis loop obtained from one of the grains, showing the significant imprint of polarization.

### Acknowledgments

We acknowledge infrastructure support from the Canada Foundation for Innovation. F.R. is grateful to the Canada Research Chairs Program for partial salary support. F.R. is also supported by FQRNT équipe (Quebec) projects and an NSERC Discovery Grant. F.R. acknowledges MDEIE (Quebec) for an international collaboration grant. R.N. is grateful to the NSERC PDF fellowship program (Canada) for partial salary support.