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Low-temperature scanning probe microscope

Dear Engineering and Physical Sciences Research Council (EPSRC)

I have collaborated with Neil Mathur for seven years, and in this time we have enjoyed a funded EPSRC grant entitled "Exploiting the giant electrocaloric effect" (Responsive Mode EP/E03389X).

He has become the world's foremost expert in the field of electrocalorics, following our joint paper in Science 311 (2006) 1270 on giant electrocaloric effects in sol-gel films that I fabricated. He has since performed many macroscopic measurements of my sol-gel films in his laboratory. We have a number of publications together on this, and we currently have ongoing and exciting research.

I am very enthusiastic about the proposed bid for a low-temperature scanning probe microscope (SPM), as I would value access in order to image electrocaloric effects in my sol-gel films, using the piezoforce microscopy (PFM) option to see ferroelectric domain formation. It is important to be able to vary the temperature, in order to operate near the electrocaloric phase transitions. I would hope that what we do together can strengthen our existing collaboration, and lead to a joint submission to EPSRC in Responsive Mode.

Yours sincerely

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