

## A Novel Class of Ion Sources made from Solid Electrolyte

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A bright ion source based on the solid electrolyte  $(\text{AgI})_{0.5}(\text{AgPO}_3)_{0.5}$  has been developed. The solid electrolyte source, shaped into the form of a sharp tip, provides stable currents of  $\text{Ag}^+$  in the microampere regime<sup>1</sup>. This makes it suitable for focused ion beam applications. The emission of silver ions from the apex of an amorphous electrolyte tip has been investigated by field ion microscopy. The ion emission patterns show discrete nanometer-sized spots. We present direct evidence that they represent the termination of bulk ion conduction pathways at the solid-vacuum interface. The analysis of the signals from individual emission sites suggests the existence of a network of such pathways in the solid. Auto- and cross-correlation measurements of the currents from individual sites provide quantitative information on the microscopic dynamics of charge transport in solid electrolytes as well as on the lateral extend of the pathway network<sup>2</sup>.

1. C. Escher, S. Thomann, C. Andreoli, H.-W. Fink, J. Toquant, D.W. Pohl, Appl. Phys. Lett. **89**, 053513 (2006).
2. Conrad Escher, Tatiana Latychevskaia, Hans-Werner Fink, Dieter Pohl Phys. Rev. Lett. **97**, 136601 (2006).