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Abstract for an Invited Paper
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Mass Flow in Solid ^4He as Observed by Fountain Effect Measurements¹

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We have created an experimental cell in which solid helium is sandwiched between two Vycor rods which are each in turn in contact with reservoirs of superfluid ^4He [1]. Application of a temperature difference between the two reservoirs creates a thermo-mechanical effect, which causes a flux of atoms from one reservoir to the other through the solid helium, which is off the melting curve. The flux is measured to increase with falling temperature below about 650 mK, fall precipitously near 80 mK and then rise again at lower temperatures [2]. Results of these experiments as well as the behavior of solid growth will be presented and discussed in the context of recent theoretical work.

[1] M. Ray and R.B. Hallock, Phys. Rev. Letters 100, 235301 (2008); Phys. Rev. B 79, 224302 (2009).

[2] M. Ray and R.B. Hallock, Phys. Rev. Letters 105, 145301 (2010).

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