

STEM

the one data point obtained representative of the freezing

made measurements on from these points. Cycling and no decrease in the lengths were attained. Disappearance and above 0.989 could either we had exceeded the limit of form at these compositions. these narrow composition on the cooling curves. The is very low, with 0.005 mol representing upper limits for the

theoretically. Both from these solubilities would be system, in which solubilities 5 mol fraction Na in K were agree with the findings of sonance, reported the solid e limit given above. They ch would be expected to be

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an intermetallic compound, lutions with compositions l repeatedly in the freezing ctic to the melting point. eutectic followed by slow indicative of compound

tem by a sluggish reaction, it into an apparatus where ined. This apparatus has lorimeter, with which it is perature range for hours,

o produce evidence of an l (i) alternate slow cooling a temperature range from annealing the sample by he cycling was repeated 5 rature of the sample was perature. Significantly, a constant rate of energy conversion to compound d, the sample was warmed of compound formation,

In a further attempt to form an intermetallic compound, an alloy (0.328 mol fraction rubidium) was studied at high pressures. The sample was encapsulated in polyethylene, placed in a graphite cylinder and subjected to pressures up to 60,000 atm in one of the tetrahedral presses available in the high pressure laboratory at Brigham Young University.<sup>10,11</sup>

Time-temperature heating and cooling curves were obtained on the sample at various pressures by using the graphite capsule as a resistance heater. Temperatures were measured with a chromel-alumel thermocouple. A halt in the cooling or warming curve due to the eutectic was easily identified. The eutectic increased from 269 K at atmospheric pressure to 397 K at 60,000 atm. No other halts were observed at any pressure. Comparable measurements in the sodium-potassium system gave both a eutectic halt and a peritectic halt over the same pressure range.<sup>12</sup> It is concluded that pressure does not bring about the formation of an Na<sub>2</sub>Rb intermetallic compound.

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<sup>8</sup> pp. 1001-1002 in ref. (4).

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<sup>11</sup> H. T. Hall, *Rev. Sci. Instr.*, 1962, 33, 1278.

<sup>12</sup> Unpublished *Ph.D. Diss.* by D. Ray Anderson (Department of Chemistry, Brigham Young University, Provo, Utah).