S.G. Wacaster [1], M. J. Streck[2]; P. J. Hughes[3]

1. Department of Geosciences, Florida International University, Miami, FL 33199 USA
2. Department of Geology, Portland State University, Portland, OR 97207 USA
3. Department of Geology and Geophysics, University of Wyoming, Laramie, WY 82071, USA

Remarkable compositional uniformity of basaltic andesites from Arenal's current activity contrasts with wide-ranging mineral compositions (excluding microlites) of plagioclase (~$An_{94–55}$), clinopyroxene (Mg# 85 to 70), spinel (Mg# 70-10, Cr# 40-0), and olivine ($Fo_{82–70}$). Orthopyroxene is more restricted (Mg# 77-70). Our questions are whether melt inclusions preserve a wide range of liquid compositions, as required by mineral compositions, and whether measuring volatile concentrations would also yield high H_2O values to help explain very anorthitic plagioclase. Melt inclusions are glassy and visible post-entrapment crystallization typically amounts to less than ~20%. Observed shrinkage bubbles of pyroxene-hosted inclusions are proportional to inclusion size. Most inclusions are surprisingly silicic ranging between 59-69 wt-% SiO_2. Parameters virtually independent of post-entrapment crystallization of host minerals, such as Mg# in plagioclase hosted inclusions and Ca# in opx-hosted inclusions, reveal that Mg# ranges from 44 to 34 in hosts as anorthitic as An_{90} and Ca# is as high as 50 in opx-hosted inclusions. Our results are consistent with mineralogical data for most mafic silicates associated with wide ranging plagioclase compositions with Mg# of 75-72. Whether degassing occurred mostly during lava flow emplacement or, previously, during final ascent in the conduit is currently being investigated by analyzing samples from deposits of the initial blast, later erupted fallout, and pyroclastic flow samples.