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N/Z Dependence of the Nuclear Caloric Curve

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Quasi-projectile sources produced in collisions of 70Zn+70Zn, 64Zn+64Zn and 64Ni+64Ni at E/A=35 MeV have been reconstructed using the charged particles and free neutrons measured in the NIMROD-ISiS detector. Equilibrated sources were selected which have a mass A=48-52 and which are on average spherical. Caloric curves for these quasi-projectiles have been extracted with the quadrupole momentum fluctuation thermometer. The caloric curves for the different light charged particle probes show a clear ordering which is consistent with a scenario in which the "expensive" particles are emitted preferentially at early times, when the source is hottest. For all light charged particle probes, the caloric curves show a clear dependence on the composition, (N-Z)/A, of the source. For a given excitation (E*/A), the neutron-poor sources exhibit higher temperatures. A consistent but smaller dependence is observed by selecting on the composition of the initial system rather than the composition of the source. The dependence on source composition is also observed in caloric curves extracted with the Albergo yield-ratio thermometer.