A nanocalorimeter was developed to characterize energetic materials for chem. process safety, homeland security, and military applications. The calorimetric cell consists of a thermal control module incorporating arrays of microfabricated heaters and temp. sensors as well as necessary electronic interconnections, and a sample encapsulation module incorporating etched enclosures designed to accommodate either solid or liquid samples. A control algorithm written using Lab VIEW incorporates the DSC principle. The nanocalorimeter promises to provide a less expensive and efficient alternative to the DSC.