MORE SHRIMP FOR THE GEOLOGIC FEAST

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Microanalytical capabilities are now commonplace in geology and there are clear advantages in the microanalysis of mineral grains in situ in polished thin sections. The SHRIMP ion microprobe is one such instrument able to analyse trace elements and isotopes from 10 to 20 µm diameter areas with a total crater depth of between 1-2 µm. Having achieved such a relatively fine spatial resolution, in quest of rapid analyses, it is a retrograde step to tolerate the *30µm diameter spot sizes and many tens of microns depth currently employed by lasers attached to a variety of ICP instruments.Recent developments in SHRIMP technology include a multicollector for SHRIMP II, charge mode data acquisition and the third generation SHRIMP RG, a reverse geometry instrument capable of routine measurements at 20,000 mass resolution. SHRIMP has become known as a zircon factory, achieving (relative to IDTIMS) moderate precision of ±1% or better for Palaeozoic U-Pb ages. There are, however, many other SHRIMP applications including major, trace and REE element analyses on 30 µm mineral scale, and stable isotope ratio determinations: C, B and S. With a Cs ion gun, SHRIMP II and RG have the capability of higher precision S and O isotope measurements. SHRIMP and other SIMS instruments remain the only viable option for some cosmochemical applications, e.g. major, trace and isotope ratio determinations of interstellar dust particles.