

Source of Iranian Porphyry Copper Hosted Intrusions: Constraints from Hf Isotope Ratios in Zircon

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Zircon Hf isotope ratios from Iranian mineralized intrusions have been studied. The Hf isotopic ratios for the studied porphyry intrusions are all very similar, and the averages of eHf values from Sar Cheshmeh, Meiduk, Darreh Zar, Bondar Hanza, and Sungun porphyry intrusions are +8.2, +9.3, +9.2, +10, and +8.6, respectively. The positive and restricted eHf values in the studied porphyry intrusion zircons, combined with the lack of inherited zircons, show continental crust did not contribute to the evolution of the porphyry magmas. The eHf in the studied zircons are between depleted mantle and lower crust values with a tendency to the depleted mantle. According to the adakitic nature of the studied porphyry intrusions, a post-collisional tectonomagmatic setting, and their zircon eHf values, it seems primary magma must have originated from a juvenile metamorphosed mafic lower crust with a significant contribution of depleted mantle.