振草セリサイト鉱床の様々な電気・電磁探査データの総合解釈

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Integrated interpretation of various electrical and electromagnetic survey data of the Furikusa sericite deposit, Central Japan

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Various electrical and electromagnetic surveys were carried out around the Furikusa sericite deposits at the southern part of the Otoge cauldron, Central Japan. In order to investigate the hydrothermal system that formed high-quality sericite veins, AMT measurements were performed at 18 sites along a WNW-EWE profile traversing the strike of the Shitara central dike swarm, which was formed in the later period of the post-cauldron stage. In order to obtain the three-dimensional distribution of the sericite veins, high-density DC resistivity surveys were carried out along nine lines which cover the northern part of the Furikusa sericite deposit. IP surveys were also carried out along three lines to grasp hydrothermal alteration zones developed around the sericite veins. SP surveys were conducted around the deposit to acquire the information on the groundwater and subsurface geochemical environment. Furthermore, DC resistivity, IP, SP and GPR surveys were carried out in tunnels of the deposit to detect the sericite veins in detail. On the other hand, electric properties of sericite and surrounding rock samples taken from the tunnel walls were measured at the laboratory. The integrated interpretation of these survey data suggests that electrical and electromagnetic surveys are effective in investigating the hydrothermal system and altered minerals including clays which were formed by volcanic and hydrothermal activities.

大峠コールドロン中に形成された振草セリサイト鉱山に周辺において、様々な電気・電磁探査実験を実施した。高品位のセリサイト脈を作り出した熱水系を把握するため、後コールドロン期の末期に形成された設楽中央岩脈群の走向を横切る測線に沿って 18 点で AMT 法調査が行われた。セリサイト脈の 3 次元的な分布を求めるため、高密度の直流比抵抗探査が振草鉱山の北側を覆う９本の測線に沿って行われた。また、そのうち３本の測線では、セリサイト脈周辺に発達する熱水変質帯を把握するため、IP 法調査が行われた。地下水や地下の地球化学的環境に関する情報を得るため、鉱山周辺で SP 法調査を実施した。さらに、セリサイト脈を詳細に求めるため、鉱山の坑道で比抵抗法、IP 法、SP 法および地中レーダ探査を実施した。一方、坑壁から採取したセリサイトや母岩の試料の電気物性を測定した。これらの調査データの総合解析から、電気・電磁探査は、火山活動や熱水活動で形成された熱水系や粘土鉱物の探査に有効であることがわかった。