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Study and Discovery of Gold Bearing Conglomerates in the North China Craton

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Conglomerate types of gold deposits are predominantly hosted within cratons from the Achaean to the Paleoproterozoic in the world. The North China Craton is one of the three, including Yangtz and Tarim in China, which has significant exposure of the Proterozoic conglomerate horizons in the sedimentary basins of Shandong, Inner Mongolia, Shanxi, Hebei, Tianjin, Henan and even Jilin in the north and northeastern parts of China. The overlying area of the whole sedimentary basin is estimated to be larger than 100,000 km², which is similar or even larger in size than the Witwatersrand Basin in South Africa of about 80,000 km² and Tarkwa in Ghana of about 90,000 km². It is named the North China Basin by us for descriptive purposes. This paper presents the results of an initial field investigation, as well as mineralogical, geochemical and isotopic studies, through which a number of conglomerate horizons were identified in some subbasins with the economic potential of gold mineralization in the North China Craton. The gold-bearing conglomerates in the North China Basin are characterized by: 1) Brownish color of the matrix; 2) Gravels of single quartz and quartzite; 3) Gold-hosting minerals of hematite (>90%) and magnetite without sulfides; 4) Gold grades mostly below 1g/t with nuggets through mineral separation from the samples of outcrops; 5) Its formation in the Paleoproterozoic, such as Henan Songshan (about 2.2 billion years) and Tianjin Jixian (about 1.65 billion years); and 6) Gold mineralization similar to the Tarkwan Basin in Ghana, formed at about 1.9 Ga, rather than the Witwatersrand Basin formed at between 2.7 and 2.9 Ga. It is concluded that there is great potential for gold mineralization in the North China Basin.