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RESEARCH & COLLABORATION PROFILE

KEY WORDS: High-grade metamorphism, Igneous activity, Geochemistry, Geochronology, Tectonic evolution



Research Snapshot.

RESEARCH EXPERTISE

- **Precambrian metamorphism, magmatism, and NE Asia tectonics** Reconstructs P-T-t paths of high-grade paragneisses and multiple Precambrian magmatic events in South Korea. Links these to NE Asian Precambrian tectonic evolution.
- **Phanerozoic polyorogeny and paleogeographic reconstruction:** Studies Paleozoic–Triassic metamorphism and Phanerozoic igneous activity to interpret their roles in NE Asian paleogeography.
- **Carbon decoupling and graphite mineralization in high-grade metamorphism:** Studies carbon decoupling and graphite deposition during high-grade metamorphism, emphasizing genetic links between carbon cycling and ore mineralization from fluid–rock interaction.
- **Trace elements and native hydrogen in igneous/metamorphic rocks:** Covers trace element and native hydrogen generation in igneous/metamorphic rocks, including serpentinization pseudosection modeling for hydrogen exploration

RECENT RESEARCH HIGHLIGHTS

- **Multiple Paleoproterozoic magmatic activities in the Gyeonggi Massif (G3, 2026):** Discovery of the Rhyacian and Orosirian multiple magmatic events in the Gyeonggi Massif revealing close relationship between Gyeongg Massif and North China Craton.
- **Orosirian arc-related magmatism in the Yeongnam Massif (Geochem, 2026):** Identification of the Orosirian arc-related magmatism in the Yeongnam Massif implying that YM records distinct magmatic activities in northeast Asia.
- **Orosirian arc-related magmatism in the Yeongnam Massif (Gond, Res, 2026):** Genetic process of the Orosirian meta-granitiods in the Yeongnam Massif and its relationship with metallogenic process.
- **Paleozoic orogeny-related metamorphism in the Gyeonggi Massif (Geos. Fron, 2024):** The Gyeonggi Massif underwent orogeny-related metamorphism during Devonian, new constraint to the metamorphic P-T-t history and tectonic reconstruction of the massif.

POTENTIAL COLLABORATION RESEARCH

Best-fit collaborator areas: include igneous and metamorphic petrology, geochronology, mineralogy and energy-resource research.

- **1. Igneous & metamorphic petrology:** researchers in igneous and metamorphic petrology together with geochronology, combining P-T-t analysis, phase equilibria, and radiometric dating to constrain metamorphic and magmatic histories in the Gyeonggi Massif and Northeast Asia
- **2. Mineralogy & geochronology:** Strong fit also comes from mineralogy and geochronology collaborators focused on carbon and graphite mineralization, metamorphic fluids, and isotopic-chronological constraints on ore-related processes.
- **3. Energy-resource research:** energy-resource research in igneous and metamorphic rocks, especially native hydrogen generation and serpentinization-based modeling for hydrogen exploration

SELECTED RECENT PUBLICATIONS

- **Geochem. Geophys. Geosys. 2026, 27, e2026GC013080**. Petrogenesis and Tectonic Implication of the Newly Identified Rhyacian and Orosirian Orthogneisses in the Northwestern Part of the Gyeonggi Massif (Soyeonpyeongdo and Ganghwado Areas), South Korea: Constrained from Whole-Rock Geochemistry and Zircon U-Pb-Hf Isotopic Compositions
- **Geochem. 2026, 86, 126456**. Multiple Orosirian Arc-Related Magmatic Events in the Southwestern Yeongnam Massif, South Korea: Implications for Paleoproterozoic Tectonics of Northeast Asia
- **Gond. Res. 2026, 149, 141-157**. Geochemistry and zircon U-Pb-Hf isotopic analysis of the Paleoproterozoic granitoids (ca. 1997-1967 Ma) in the northeastern Yeongnam Massif, central-eastern Korean Peninsula: Geological significance and metallogenic potential
- **Geos. Front. 2024, 15, 101840**. Middle Paleozoic metamorphic and sedimentary events in the central Korean Peninsula and their geological implications

REPRESENTATIVE RESEARCH FIGURES / SCHEMES

