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RESEARCH & COLLABORATION PROFILE

KEY WORDS: Structural geology, Tectonics, Fold-thrust Belt, Subsurface investigation, Deep-Earth



Research Snapshot. Prof. Jang investigates the structural architecture and tectonic evolution of orogenic belts through field-based structural analysis and quantitative reconstruction. Her research traces deformation histories from rifting and basin development to collision, inversion, and later reactivation, with a particular focus on the Korean Peninsula and the East Asian continental margin. She also applies structural models to the assessment of natural resources, deep subsurface systems, and geological engineering problems.

RESEARCH EXPERTISE

- **Structural architecture and kinematic evolution of orogenic belts:** resolving the geometry, deformation sequence, and strain partitioning of fold-thrust belts, fault systems, and associated metamorphic terrains.
- **Tectonic evolution of the Korean Peninsula and East Asian continental margin:** reconstructing the transition from rifting and basin development to collision, post-orogenic modification, and later reactivation across multiple geological periods.
- **Applied structural geology in natural resources and geological engineering:** evaluating structural controls on mineral and energy systems, deep subsurface storage, and geological conditions relevant to infrastructure and ground stability.

These research themes are addressed through integrated field mapping, cross-section construction and restoration, 3D structural and kinematic analysis, microstructural characterization, and geochronological and geochemical constraints.

RECENT RESEARCH HIGHLIGHTS

- The **Okcheon Belt preserves a polyphase deformation record** reconstructed through field mapping, cross-section restoration, and geochronological constraints.
- The **Taean-Seosan area records systematic changes in fold geometry and deformation style** that constrain Triassic tectonic reworking of the Western Gyeonggi Massif.
- **Mesoproterozoic BIF and detrital-zircon records from western Korea provide tectonic links** to the wider evolution of the East Asian continental margin.
- **Structural and tectono-metamorphic processes control REE enrichment and deep subsurface architecture** relevant to resource evaluation and geological engineering.

POTENTIAL COLLABORATION RESEARCH

Best-fit collaborator areas: structural geology & tectonics | geochronology & isotope geochemistry | metamorphic petrology & microstructures | 3D geological modelling

- **1. Integrated reconstruction of orogenic belts** through joint field mapping, structural restoration, and comparison of deformation histories across the Korean Peninsula and other continental margins.
- **2. Tectonic timing and process constraints** by combining structural observations with geochronology, isotope geochemistry, and metamorphic records.
- **3. Multiscale analysis of deformation and fluid-rock interaction** using fracture networks, EBSD, strain analysis, and fault-zone studies.
- **4. Applied structural studies of resource and subsurface systems** focused on mineralization, deep geological storage, and structural conditions relevant to geological engineering

SELECTED RECENT PUBLICATIONS

- **Gondwana Research (2026) 150, 358-379.** Mesoproterozoic tectonic environment in the 'Boring Billion': insight from the Algoma-type BIF along the central-western Korean Peninsula.
- **Geoscience Frontiers (2024) 15, 101700**. Paleozoic tectonic evolution of the proto-Korean Peninsula along the East Asian continental margin.
- **Ore Geology Reviews (2026) 194, 107372**. Rare earth element enrichment through multi-stage magmatic differentiation and tectono-metamorphic processes.

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https://sites.google.com/view/structuralgeology-cnu

REPRESENTATIVE RESEARCH FIGURES / SCHEMES

