

## Geotectonic history of Mona Complex in Anglesey-Lleyn, Wales

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The Mona Complex in Anglesey-Lleyn records a Precambrian subduction-accretion orogeny on the Avalonian margin. It contains an accreted remnant of an oceanic crust and calc-alkaline igneous and high-pressure metamorphic rocks. Their geochronological study plays a key role in comprehension of geotectonic evolution of the Avalonian subduction system. Therefore, we have conducted U-Pb dating of detrital zircons from volcano-sedimentary rocks in the Monian Supergroup, and then K-Ar dating of white micas from pelitic and mafic schists in the Blueschist unit, the Central Shear Zone, and the New Harbour Group. Our new chronological dataset leads to re-interpretation of Anglesey-Lleyn geotectonic framework in terms of a younger analogue of comparable blueschist belts and accretionary orogens in Japan and California.

The evidences of arc-related magmatism are widely distributed in Wales and Central England, and they date back to 760 Ma. Age data of calc-alkaline granites suggest that the Avalonian subduction and its arc-related magmatism had already started by 711–677 Ma. In the period of main arc magmatism (616–555 Ma), a subduction-related accretion of the Gwna Group sediments started (by 578 Ma) on an active margin of Avalonia. Its accretion likely continued to 530 Ma. Moreover, metamorphic rocks of the Blueschist unit and the Central Shear Zone were exhumed from different crustal depths in the interval 578–530 Ma. Afterwards, sedimentation of the New Harbour and South Stack Groups occurred at  $< 515 \pm 13$  Ma and  $< 501 \pm 10$  Ma. Sediments of the New Harbour and South Stack Groups were finally accreted underneath the base of the Gwna Group at the accretionary wedge. The greenschist facies metamorphism of the New Harbour Group at 474 Ma constrains its minimum depositional age. In a larger perspective, our new ages are broadly contemporaneous with the calc-alkaline continental arc magmatism in NW Wales and Central England that formed by successive eastward subduction from 711 to 474 Ma.

Keywords: Avalonia, Anglesey-Lleyn, Pacific-type orogeny