The characteristic of lithology and facies and reservoir of volcanic rock in Songliao Basin, China

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Yingcheng formation is rich in volcanic rock.in Songliao Basin,China.Volcanic lithofacies consists of eight types; such as fallout facies, effusion facies, base surges facies, pyroclastics flow facies, lahar facies, eruption-sedimentary facies,sub-volcanic rock facis and sub-explosive breccia facies. Volcanic apparatus make up of layered volcano, micro-shield volcano and cone volcano. Lithology of volcanic rock is mainly middle acid volcanic rock (dacite, rhyolite, middle acid brecciated tuff and tuff), belonging to the calc-alka-line series of subalkaline series. The eruptive and overflow facies have better reservoir capacity, the reservoir capacity of volcanic rocks has largely been affected by volcanic condensation diagenesis, tectonism, solution and fluid activity.the volcanic rocks reservoir commonly with the porosity of 6.3% ~ 10.8 % and permeability of about $0.55\times10^{-3}\mu m^2$ ~ $122.0\times10^{-3}\mu m^2$.The most of effective reservoir are the upper phase or external phase of volcanic facies belts, usually being layers or thin layers of 10-20m.The pores of volcanic reservoir could be classified into four types: 1) primary pores of original rocks, 2) diagenetic pores, 3) diagenetic fractures, 4) secondary tectoclases and weathered fractures. Types 2) and 3) are the most effective reservoir space which were formed in volcanic eruption process of cooling and aftercooling.

U-Pb age, geochemical and Hf-O isotopic constraints on magma source of the I-type calc-alkaline Baimaxueshan Batholith (SW China): Implications for crustal recycling at a convergent margin

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The late Permian to Tiassic is a critical period of the development of the eastern Paleo-Tethys, and corresponds with ocean closure and arc accretion onto the margin of Asia. Mafic enclaves and host granitoids from the Baimaxueshan batholith within the Sanjiang Orogen, SW China, document the tectonomagmatic history of accretion. SHRIMP U-Pb analyses on zircons from the mafic enclaves and host granitoids bracket their crystallization ages into the range of ca. 253-248 Ma, and establish that the mafic and felsic magmas were coeval. The granitoids have calc-alkaline, metaluminous I-type character, and show features of magma mixing between mafic and felsic melts. Whole-rock elemental and Sr-Nd isotopic systematics are compatible with an infracrustal origin for the felsic melt, whereas the mafic enclaves may represent relicts of magmas derived from partial melting of subduction-modified ancient lithospheric mantle triggered by fluids/melts released from the descending slab. The elevated *in situ* zircon $\delta^{18}O$ values shown by both the mafic enclaves (9.23 ± 0.2‰ (VSMOW)) and host rocks (8.70 ± 0.09‰) require a considerable input of high-$\delta^{18}O$ supracrustal components through subduction or underthrusting to the sub-arc mantle wedge, which also explains the enriched Sr-Nd and zircon Hf isotopic ratios ($\varepsilon_{Hf}(t)$ = -10 ± 1) displayed by the enclave samples. This together with zircon Hf depleted mantle model ages (T_{DM}^{C}= 1.53 to 2.52 Ga) peaked in the Mesoproterozoic imply that crustal growth processes largely involved reworking of pre-existing lithosphere rather than accretion of juvenile asthenosphere-derived materials.