

## **The structure and deformation history of the serpentinite bodies along the Bentong Suture: a case study at Bukit Rokan Barat**

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Along the boundary of the Western and the Central Belts of Peninsular Malaysia, there are a number of relatively small bodies of serpentinite outcrops. It is believed that these outcrops represent the serpentinitised ultramafic rocks, which intruded the Lower Devonian rock formations. The serpentinite outcrop at Bukit Rokan Barat, Negeri Sembilan can be considered as one of the best that can be found in this area. The structure observed at this outcrop could represent the structure of the other serpentinite bodies situated along this boundary. Furthermore the deformation history, which is deduced from this structural study, may be used to describe the deformation history that took place along the boundary between the Western and Central Zones of Peninsular Malaysia.

The observed serpentinite body at Bukit Rokan Barat is well foliated, trending approximately in north-northwest and northwest direction and moderately to steeply dipping towards northeast. This rock body had suffered at least three phases of shearing, the earlier two ( $D_1$  and  $D_2$ ), were related to ductile, while the third ( $D_3$ ) was related to brittle deformation. The ductile deformations are indicated by the presence of shear zones, foliations and crenulations folds (microfolds) and lenticular-shaped structures, and the brittle deformation by the lateral faults. The maximum principal paleo-stresses ( $s_1$ ) related to the ductile deformations ( $D_1$  and  $D_2$ ) were acting from NE and ENE directions respectively and the brittle deformation ( $D_3$ ) from NNE direction. The approximately EW tension cracks developed within the lenticular shaped structures are interpreted as the last phase of deformation suffered by this rock body.

*Di sepanjang sempadan antara Jalur Barat dan Tengah Semenanjung Malaysia, terdapat beberapa singkapan jasad-jasad kecil serpentinit. Singkapan-singkapan tersebut dipercayai mewakili batuan ultramafik yang telah berubah menjadi serpentinit, yang dahulunya merekah formasi batuan Devon Bawah. Salah satu singkapan yang terbaik didapati di Bukit Rokan Barat, Negeri Sembilan. Struktur yang dicerap di singkapan ini boleh mewakili struktur untuk jasad-jasad serpentinit lain yang terletak di sepanjang sempadan tersebut. Seterusnya sejarah canggaan yang ditafsirkan berdasar kepada kajian struktur di sini juga boleh digunakan untuk menjelaskan sejarah canggaan yang telah berlaku di sepanjang sempadan zon Barat dan Tengah Semenanjung Malaysia.*

*Jasad serpentinit yang dicerap di Bukit Rokan Barat mempunyai foliasi yang sangat baik, berarah hampir utara-bratlaut hingga barat-laut. Jasad batuan ini mengalami sekurang-kurangnya tiga fasa ricihan, dua yang awal ( $D_1$  dan  $D_2$ ) berkaitan dengan canggaan mulur, manakala yang ketiga ( $D_3$ ) berkaitan dengan canggaan rapuh. Canggaan rapuh ditunjukkan oleh kedapatan zon ricih, foliasi, lipatan kerdut dan struktur berbentuk lentikular, manakala canggaan rapuh oleh sesar mendatar. Tegangan kuno utama maksimum ( $s_1$ ) yang berkaitan dengan canggaan mulur ( $D_1$ ) dan ( $D_2$ ) masing-masing telah bertindak dari arah timurlaut dan timur-timurlaut dan canggaan rapuh ( $D_3$ ) dari utara-timurlaut. Rekahan tensi berarah hampir timur-barat yang terbentuk pada jasad berbentuk lentikular merupakan canggaan terakhir yang alami oleh jasad batuan di sini.*