

## The geochemical discrimination parameters for limestone: A case study of Bukit Sagu limestone, Kuantan, Pahang

**HAMZAH MOHAMAD**

Jabatan Geologi  
Universiti Kebangsaan Malaysia  
43600 Bangi, Selangor

Apart from calcite, a limestone may contain dolomite, quartz, and clay minerals in various proportions. Taking into consideration the possible mixture of the four components above, four types of limestone are anticipated to occur: 1) Pure limestone, (2) Siliceous (quartzose) limestone, 3) Aluminous (clayey) limestone, and 4) Magnesium rich (dolomitic) limestone. The hypothesis has been tested using 112 chemical analyses (by XRF techniques and other wet chemical methods) of Bukit Sagu limestone, Kuantan, Pahang. Based on the minerals that occur in the samples (by microscopic study and XRD technique), the four types of limestone have been recognised, with the following geochemical characters:

<b>Petrographic Name</b>	<b>CaO</b>	<b>SiO<sub>2</sub></b>	<b>Al<sub>2</sub>O<sub>3</sub></b>	<b>MgO</b>	<b>K<sub>2</sub>O</b>
Pure limestone	> 54%	< 1%	< 1%	< 1%	< 1%
Siliceous (quartzose) limestone	40–53%	> 1%	< 1%	< 1%	< 1%
Aluminous (clayey) limestone	52–54%	> 1%	> 1%	< 1%	> 0.2%
Magnesium rich (dolomitic) limestone	38–53%	< 1%	< 1%	> 1%	< 1%

It is also suggested that the compositional discrimination can be easily performed using a diagram SiO<sub>2</sub>-(Al<sub>2</sub>O<sub>3</sub> + K<sub>2</sub>O)-(CaO + MgO), in order to supplement the more conventional diagram SiO<sub>2</sub>-CaO-MgO.