

## 岩土材料的脆性研究

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**摘要** 对岩土材料的脆性破坏过程进行正确描述是很困难的。目前, 有关脆性的定义和度量还没有统一的说法, 脆性既是变形特性又是材料特性。首先对岩土材料的脆性进行了讨论, 然后在总结脆性度量方法的基础上建议了一个可以描述材料脆性变化的脆性指数, 并验证了这一指数可以较好地描述岩土材料在受荷时的脆性变化, 最后应用二元介质模型, 对岩土材料在受荷过程中的应力应变特征进行了模拟。模拟结果表明: 这一模型可以模拟低围压下的应变软化到高围压下的应变硬化现象, 并且脆性指数随着围压的增大而逐渐减小。

**关键词** [岩土力学; 脆性; 脆性指数; 二元介质模型](#)

分类号

## STUDY ON BRITTLENESS OF GEOMATERIALS

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### Abstract

How to describe the brittle failure process for geomaterials is a challenging problem. Up to now, there is no harmony among different authors in definition, concept or measurement of brittleness. The concept of brittleness is discussed firstly. Then, a brittleness index describing the brittle change of geomaterials is proposed on the basis of the conclusion of the prior measurement of brittleness, and is verified to describe the brittle change very well. Finally, the binary medium model proposed recently by the authors is used to simulate the stress-strain characteristics of geomaterials under loading conditions; and it is found that the model can duplicate the transference of deformation mode from the strain softening under the low confining pressures to the strain hardening under the high confining pressures; and the brittleness index gradually reduces when the confining pressure is increased.

**Key words** [rock and soil mechanics; brittleness; brittleness index; binary medium model](#)

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