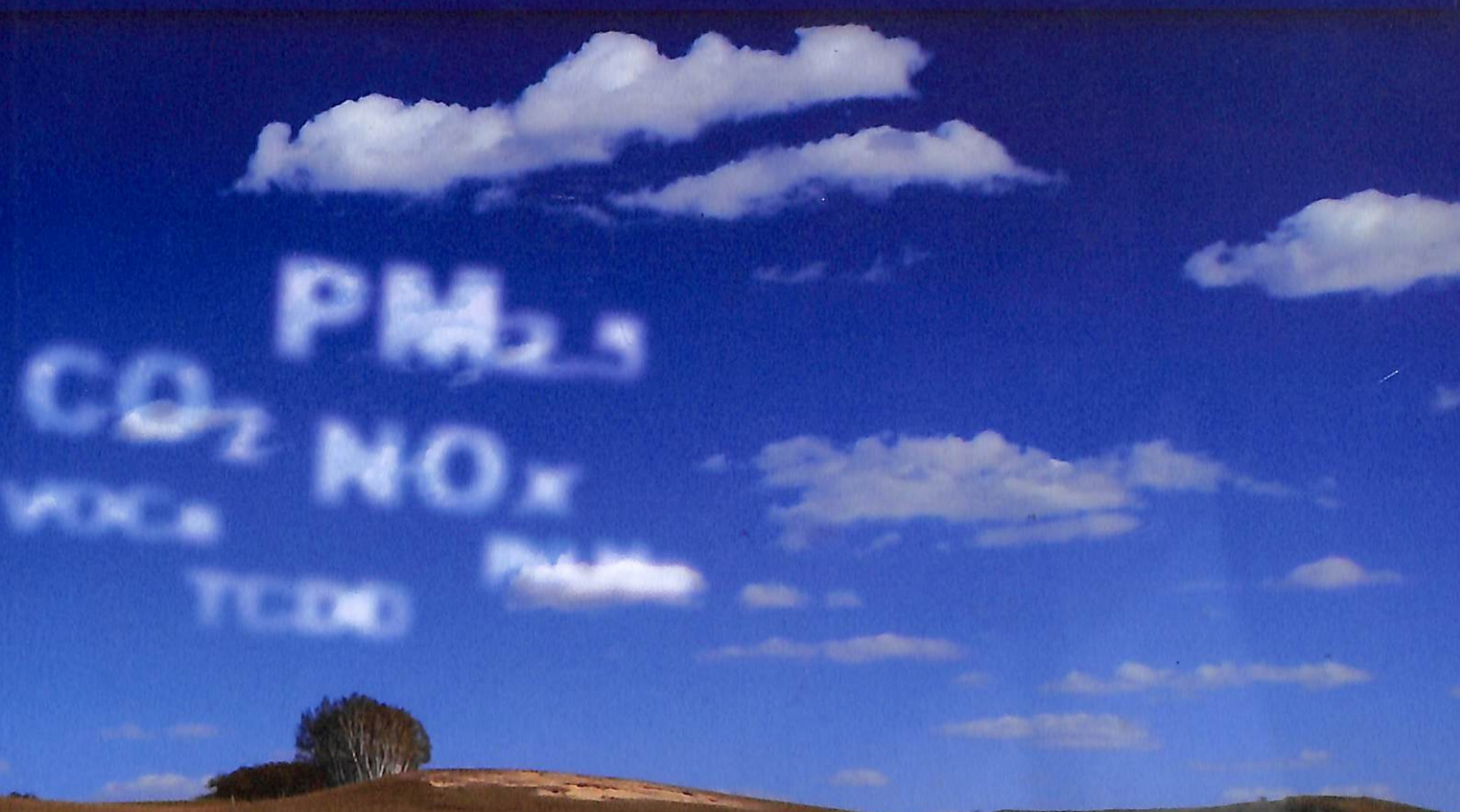


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Progress and prospects of atmospheric environmental sciences in China

Fahe Chai, Abdelwahid Mellouki, Yujing Mu, Jianmin Chen, Huiwang Gao, Hong Li



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Sediment organic matter
Sediment iron

pH Water calcium
Sediment aluminum

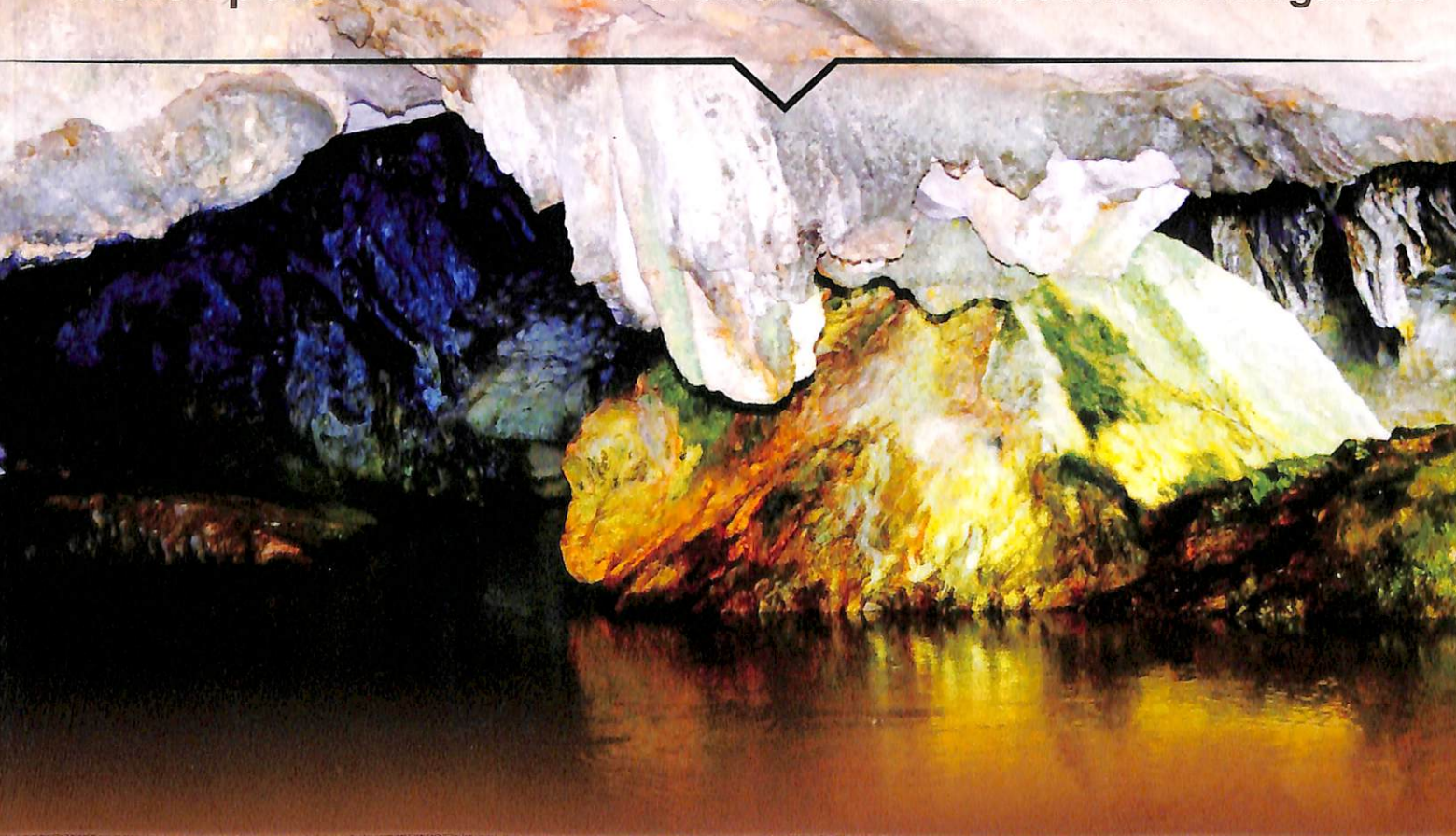
Sediment calcium

Arsenic in karst subterranean stream

Water magnesium

Redox potential

Water bicarbonate ion sediment manganese



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Invited article

Review of the progress in preparing nano TiO₂: An important environmental engineering material

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ABSTRACT

TiO₂ nanomaterial is promising with its high potential and outstanding performance in photocatalytic environmental applications, such as CO₂ conversion, water treatment, and air quality control. For many of these applications, the particle size, crystal structure and phase, porosity, and surface area influence the activity of TiO₂ dramatically. TiO₂ nanomaterials with special structures and morphologies, such as nanospheres, nanowires, nanotubes, nanorods, and nanoflowers are thus synthesized due to their desired characteristics. With an emphasis on the different morphologies of TiO₂ and the influence factors in the synthesis, this review summarizes fourteen TiO₂ preparation methods, such as the sol-gel method, solvothermal method, and reverse micelle method. The TiO₂ formation mechanisms, the advantages and disadvantages of the preparation methods, and the photocatalytic environmental application examples are proposed as well.

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