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## Novel materials and nanotechnology for construction

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The development of sustainable construction and building materials with reduced environmental footprint in both manufacturing and operational phases of the material lifecycle is attracting increased interest in the housing and construction industry worldwide. Recent innovations have led to the development of geopolymer foam concrete, which combines the performance benefits and operational energy savings achievable using lightweight foam concrete, with the cradle-to-gate emissions reductions obtained using a geopolymer binder derived from fly ash. To bring a better understanding of the properties and potential large-scale benefits associated with the use of geopolymer foam concretes, this paper addresses some of the sustainability questions currently facing the cement and concrete industry, in the context of the utilisation of foam concretes based either on Ordinary Portland Cement (OPC) or on geopolymer binders. The potential of geopolymer binders to provide enhanced fire resistance is also significant, and the aluminosilicate basis of the geopolymer binding phases is important in bringing high temperature stability. The standardisation (quality control) of feedstocks and the control of efflorescence are two challenges facing the development of commercially mature geopolymer foam concrete technology, requiring more detailed exploration of the chemistry of raw materials and the microstructural development of geopolymers.

### Biography

Cyprain Fang Kah has completed a Diploma in Business Management and is presently Procurement Manager at Emmanuel N<sup>2</sup> Co. Ltd, a leading construction consortium in Lefkosa in Northern Cyprus. He presently leads the company's affairs in following up new technologies and finding novel construction materials for effective construction.

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