





A low-carbon manufacturing technology to turn municipal solid waste incineration ash into artificial aggregates 城市垃圾焚燒灰轉化為人造骨料的低碳固化技術

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Collaborating Industrial and Governmental Parties:

混凝





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Environmental Protection Department

The Government of the Hong Kong Special Administrative Region

Civil Engineering and Development Department

The Government of the Hong Kong Special Administrative Region



HK government targets of nationwide carbon neutrality and HK lacks locally available natural resources and relay on ruling out landfills as part of the waste blueprint campaign by 2050 and 2035

importing construction materials, such as gravel and river sand



Incineration in

energy facility

(by 2025)

I·PARK waste-to-

Transportation cost and CO₂ emissions



for disposal





Low-carbon proposed technology



Our patented crushingtechnique artificial geopolymer aggregates technology

| | 发明 | 专利 | 证书 | |
|-------------------------|----------------------------|----------------------|------------------------|--------------------------|
| 发明名系 | ki 一种用于固结生 | 活垃圾焚烧飞灰 | 的材料、制备方法。 | 及应用 |
| 发明丿 | し: 侯浩波:董际棠; | 董祎尔;向偷唯; | 张珊珊:梅涛 | |
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- Turn waste into valuable construction
- materials for local industry.
- Fixation of hazardous heavy metals from
- IFA/IBA waste.



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| 2 | 发明专利证 | 书 |
| 发明名称:一种 | 中基于破碎方法的地聚合物人工背料及其非 | 网络方法 |
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| 授权公告日: 202 | 11年09月28日 授权公告号:(| N 112479615 B |
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Tasks set for this project

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- Indexing of IFA/IBA according to reactivity, toxicity, and physical properties
 - On-site mixing of IFA/IBA-based geopolymer following one-part technology
- Manufacturing of IFA/IBA-based geopolymer blocks using semi-dry mix
- Curing of IFA/IBA-based geopolymer blocks
- On-site crushing of IFA/IBA-based geopolymer blocks
- Outdoor storage of Geo-Aggregates
- Pilot wide-scale applications
 - Life cycle assessment









Pilot-scale validation and application

IBA Low-carbon Crushing technique Dry-mix technique Geopolymer (Resource recycling) Artificial Geo-Aggregates Green hot mix asphalt (enhanced ITZ) Eco-marine blocks Void filling Structural fill Pavement base Surface Course CLSM Anticorrosion fill Thermal backfill Base Course Subbase Course **Bridge reclamation** Filling abandoned structures Trench backfill

Controlled low-strength material (CLSM) for several applications