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HKUST Recycles Coal Ash into Environment-Friendly Building Materials

The Hong Kong University of Science and Technology (HKUST) will develop and manufacture novel coal ash-based building materials and products in collaboration with 3E Envirotech Products Co Ltd.

The joint project involves an investment of HK\$8 million by 3E, a newly established company specializing in the development of environmental technology that possesses commercial value.

Prof Tony Eastham, HKUST's Acting Vice-President for Research and Development, and Mr Wang Ding, Chairman and Chief Executive Officer of 3E, signed an agreement today (2 June 2001) on HKUST campus.

Dr Zongjin Li, Associate Professor of HKUST's Civil Engineering Department, will employ extrusion technology in the development of novel building materials with pulverized coal ash, an industrial waste produced by electricity-generating plants. He will work with 3E to recycle coal ash into high strength bricks, wall panels, light-weight aggregate, high-quality filler materials and masonry blocks with two-way joints.

"Compared to the traditional casting method, extrusion is a flexible technology, showing great improvement in strength, toughness, ductility and durability," says Dr Li, who is also the Director of the Advanced Cement-Based Building Products Cooperative Research Center at HKUST. "Wall panels created by extrusion can replace plaster splints and bricks. They are water- and fire-proof, and can be mass-produced in different shapes and sizes."

Under the agreement, both sides will develop an extruder for the manufacture of coal ash-based wall panels and other building materials. The collaboration will help recycle coal ash, estimated to be in millions of tons each year, greatly minimizing the pollution caused by this industrial by-product. It will also minimize construction waste, save land, energy and production cost.

"Universities and industry can join hands to translate results of technological research into commercial products in a cost-effective way that ensures the sustainable development of the environment," says Mr Wang Ding. "The applications of coal ash have not been fully utilized in Hong Kong. Tapping the strengths of Dr Li's extrusion technology, we can develop a whole series of advanced building materials that will benefit the construction industry and the environment eventually," he says.