

## Preparation of Si Fluorescent Material by Micro-Reactor System using Supercritical Fluid

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Fluorescent material containing Si was prepared from organosilane such as diphenylsilane by micro-reactor under the condition of supercritical fluid. Generally, supercritical fluid is obtained under high pressure and high temperature condition using high pressure reactor which is usually big and heavy apparatus. But, supercritical fluid condition was easily and safely obtained using micro-reactor system. The product was dark yellow discus material. PL spectral of the product was similar to that of porous silicon which was known to be composed of Q-dot silicon nano particle.



Photoluminescence of Si fluorescent material prepared by micro-reactor using supercritical fluid

## Roof Box Made from Noncombustible Magnesium Alloys

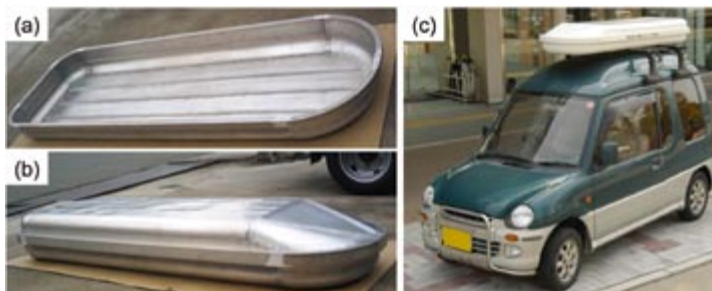
- New application of frictional stir welding -

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We developed in collaboration with Hyogo Prefectural Institute of Technology and Sakurai Industries Co., Ltd. technology for manufacturing large-sized products from the extruded noncombustible magnesium alloys through frictional stir welding (FSW) or laser welding without degrading merits of the materials. In this way, it has been made possible to build an automobile roof box, 2,000 (L) × 670

(W) × 270 (H) mm, from noncombustible magnesium alloys. The new technology allows reducing weight of a structure by about 25 % from that of comparable size made from fiber-reinforced plastics (FRP). It is expected that the technology is applied to the development of products with complicated 3D geometry from extruded or wrought magnesium alloy materials, taking advantages of superior properties.



The bottom part of the roof box (a), the exterior of the roof box (b) and the roof box on the car (c).