

# NOVEL OF BINARY METAL-NON METAL MATERIAL FOR CHAIR FLOWER PRODUCT (NOVEL Al-PS FOR CHAIR FLOWER PRODUCT)

## Inventors :

PROF. MADYA IR. MOHD ICHWAN NASUTION  
 BRIG. JEN. DATO' PROF. DR. KAMARUDIN HUSSIN  
 PROF. DR. SHAMSUL BAHARIN JAMALUDIN  
 PROF. MADYA CHE MOHD RUZAIDI GHAZALI  
 DR. KHAIREL RAFEZI AHMAD  
 CHEK IDRUS OMAR  
 MOHAMED FAISOL MOHAMED NOR  
 MOHAMAD SAFWAN ISA

## Contact Details :

SCHOOL OF MATERIAL ENGINEERING  
 UNIVERSITI MALAYSIA PERLIS  
 P.O BOX 77, D/A PEJABAT POS BESAR  
 01000 KANGAR, PERLIS, MALAYSIA  
 email : ichwan@unimap.edu.my

## INTRODUCTION

Material for aluminium product usually made from aluminium scrap. Nowadays, the price of aluminium scrap is increased. The idea is how to minimize the cost of production via minimize the weight of the product without changing the form or the shape of product.

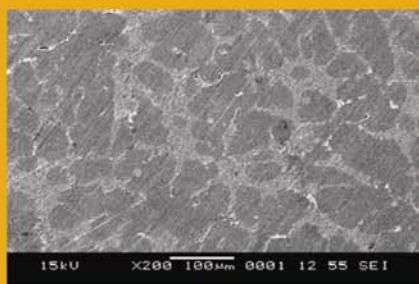
Binary aluminium and metal alloys are common and plenty. In this research, the idea is to combine aluminium with non metal polystyrene. In this case polystyrene was selected because of its low density, and low melting temperature compare with aluminium. However, combining aluminium with polystyrene as alloys is unexplored off. This concept is simple and never been attempted before due to the thermal instability and degradation of polystyrene. The product aluminium-polystyrene is then tested to study its mechanical characteristic.

## MAKING PROCESS

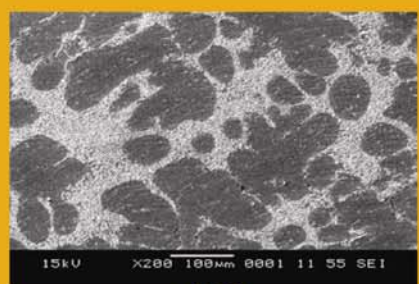


## ADVANTAGES

1. Light weight compare to aluminium products without change of shape and dimension.
2. Low density, increase hardness.
3. Cheap and low production cost.
4. Ease of processing.
5. Better handling.
6. Better finishing surface.



Al



Al-PS



Pure Al



Al-PS

Mechanical Properties & Production Cost

Material	HV	Weight	Price
Pure Al	47.83	260g	RM17
Al - PS	69.37	250g	RM16