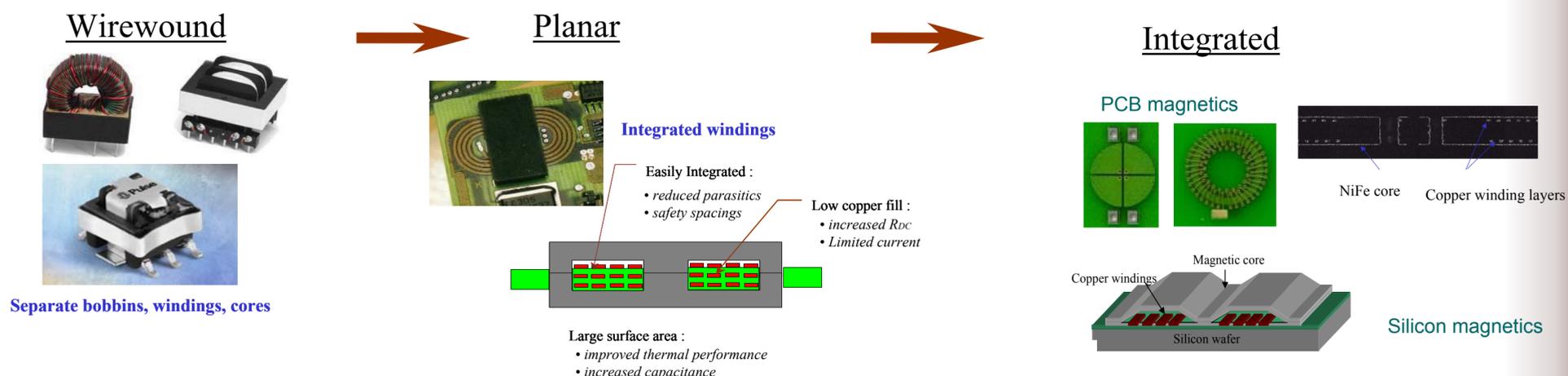


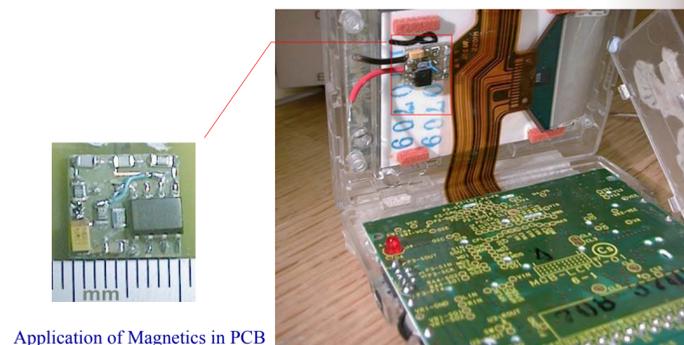
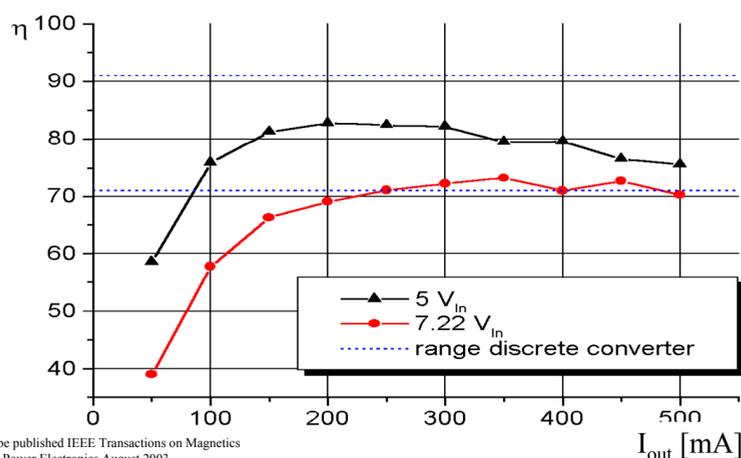
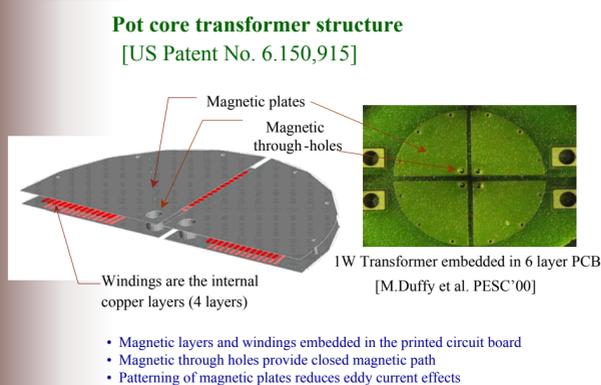
# Silicon and Printed Circuit Board (PCB) integrated magnetics for power applications

S. O'Reilly, T. O'Donnell, P. McCloskey, S.C. Ó Mathúna

## Evolution of Magnetic Components

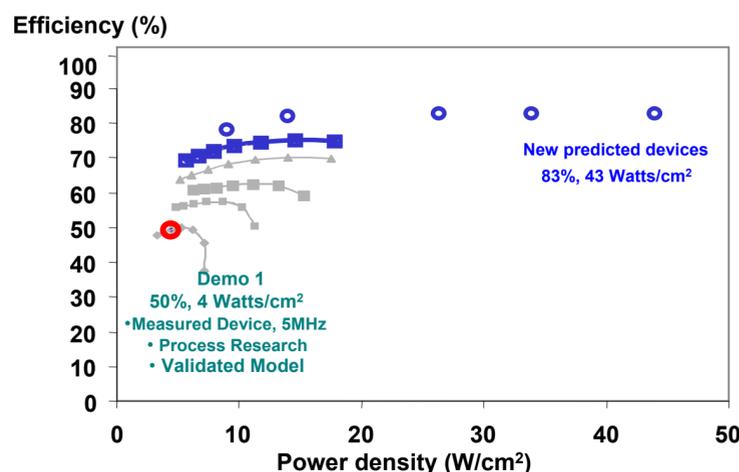
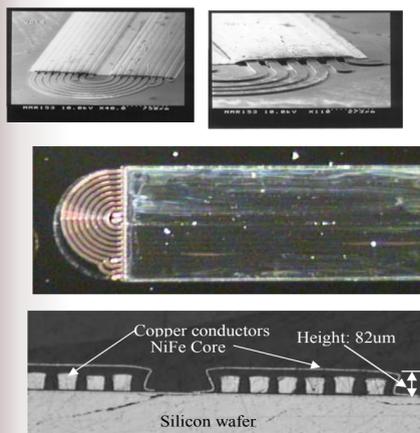
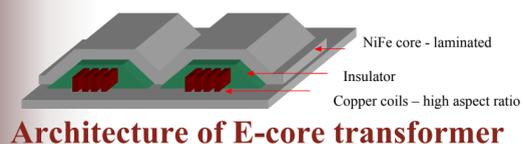


## Magnetics in PCB

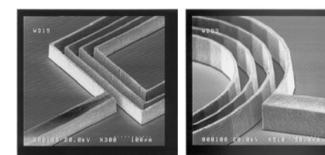


\*"Design Study for Ultra-flat, PCB Integrated Inductors for Low Power Conversion Applications", to be published IEEE Transactions on Magnetics  
 \*"PCB integrated Inductors for Low Power DC/DC Converter", to be published IEEE Transactions on Power Electronics August 2003

## Magnetics on Silicon

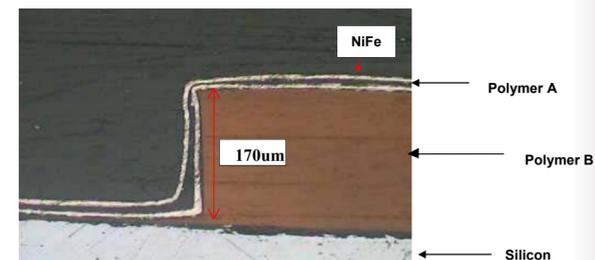


### High aspect ratio conductors :



Cu structures height 35 um, aspect ratio 7:1

### Laminated core :



3D structure (170 microns tall), covered with laminated magnetic material

\*"Electrical Performance of Micro-Transformers for DC-DC Converter Applications", IEEE Transactions on Magnetics, vol 38., no. 5, September 2002.  
 \*"Thick Photoresist Development for the Fabrication of High Aspect Ratio Magnetic Coils", Journal of Micromechanical and Microengineering, vol. 12, no. 4, pp. 444-449, July 2002