

## Supplementary Information

# Vapour Confinement as a Strategy to Fabricate Metal and Bimetallic Nanostructures.

Haritha V S<sup>a,b</sup>, Maya Balan<sup>b</sup>, J.Th.M. De Hosson<sup>c</sup> and Gopi Krishnan<sup>\*d</sup>

*a. Department of Physics, University of Kerala, Kariyavattom, Thiruvananthapuram, 695581, India*

*b. Amrita Centre for Nanosciences and Molecular Medicine, Amrita Vishwa Vidyapeetham, Kochi, Kerala 682041, India*

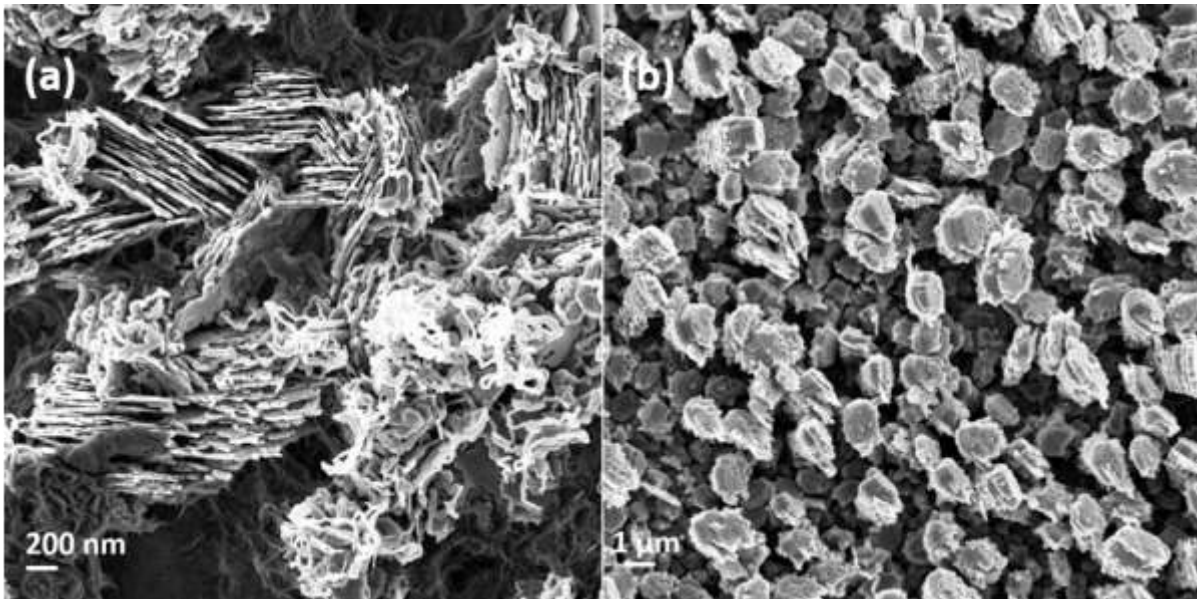
*c. Department of Applied Physics, Zernike Institute for Advanced Materials, Faculty of Science and Engineering, University of Groningen, Nijenborgh 4, 9747 AG Groningen, the Netherlands.*

*d. Renjord AS, Asbjørn Øverås veg 12 B, 7036 Trondheim, Norway*

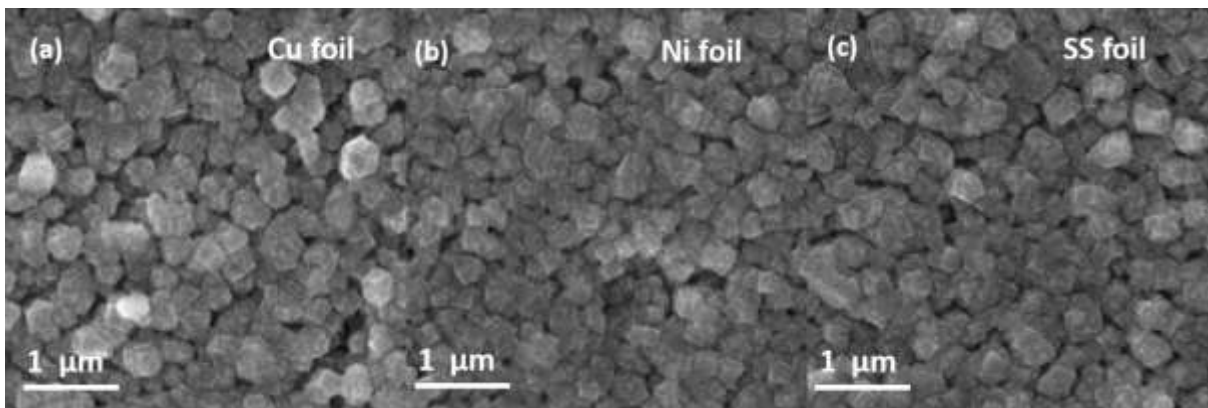
**KEYWORDS:** Magnesium nanostructures, Thermal evaporation, Supersaturation, Rapid thermal processing and Thermal decomposition.

### Corresponding Author

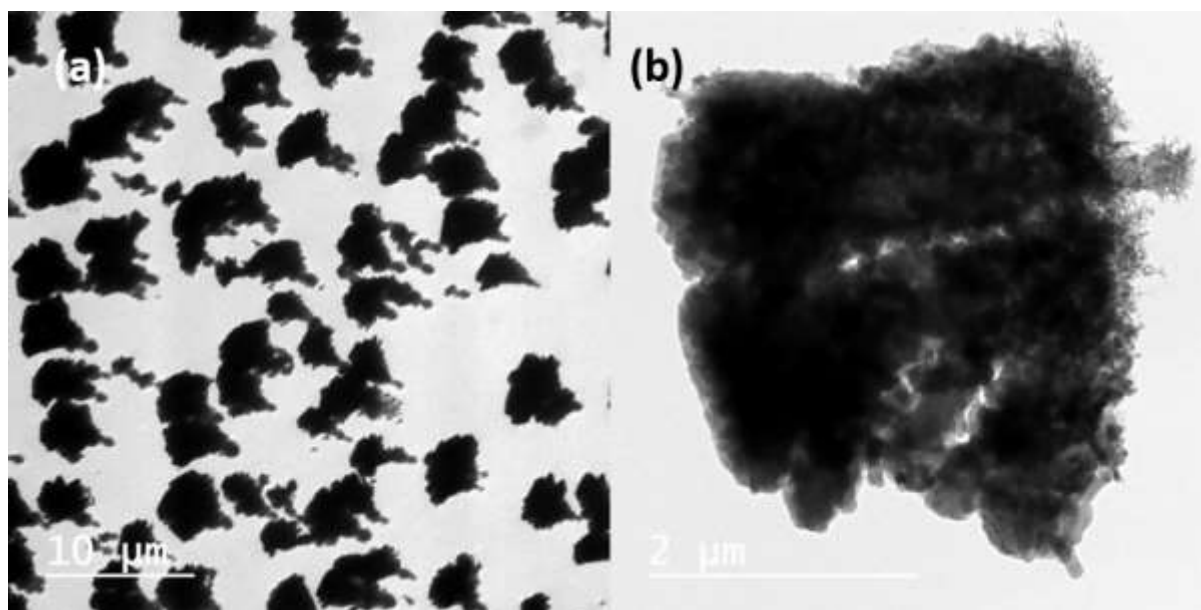
Email: [gopi.k.krish@gmail.com](mailto:gopi.k.krish@gmail.com)



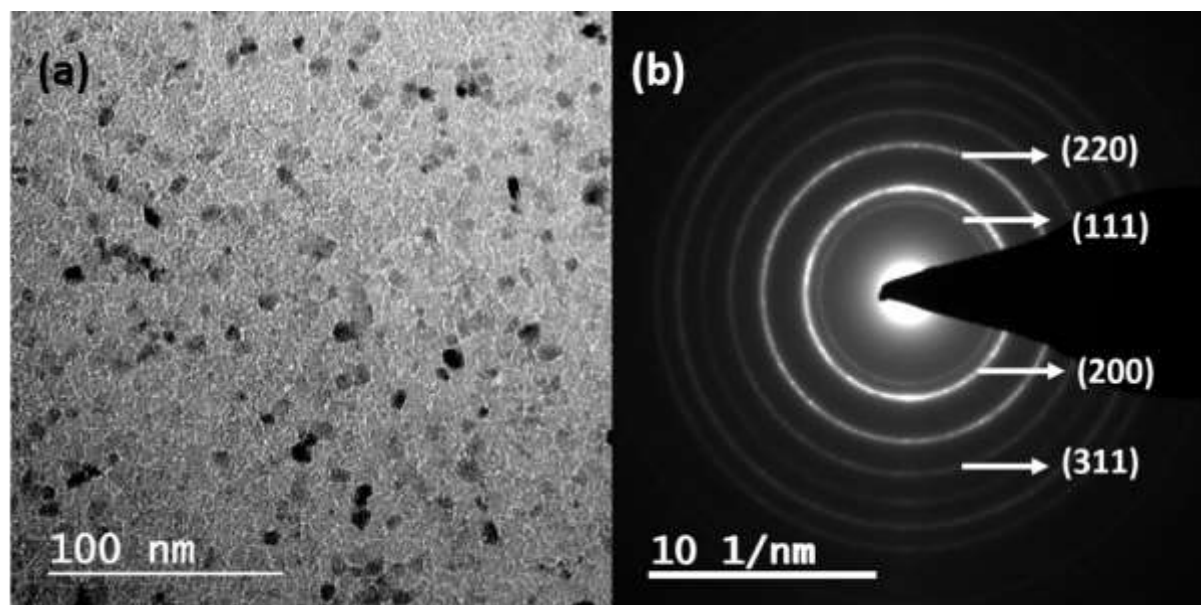
**Figure S1:** (a) shows the SEM image of Mg nanowires deposited on an SS foil at a sublimation temperature of 700°C at a heating rate of 300 °C/min (position P2) and (b) represents the Mg microstructures deposited at an evaporation temperature of 600°C (position P1).



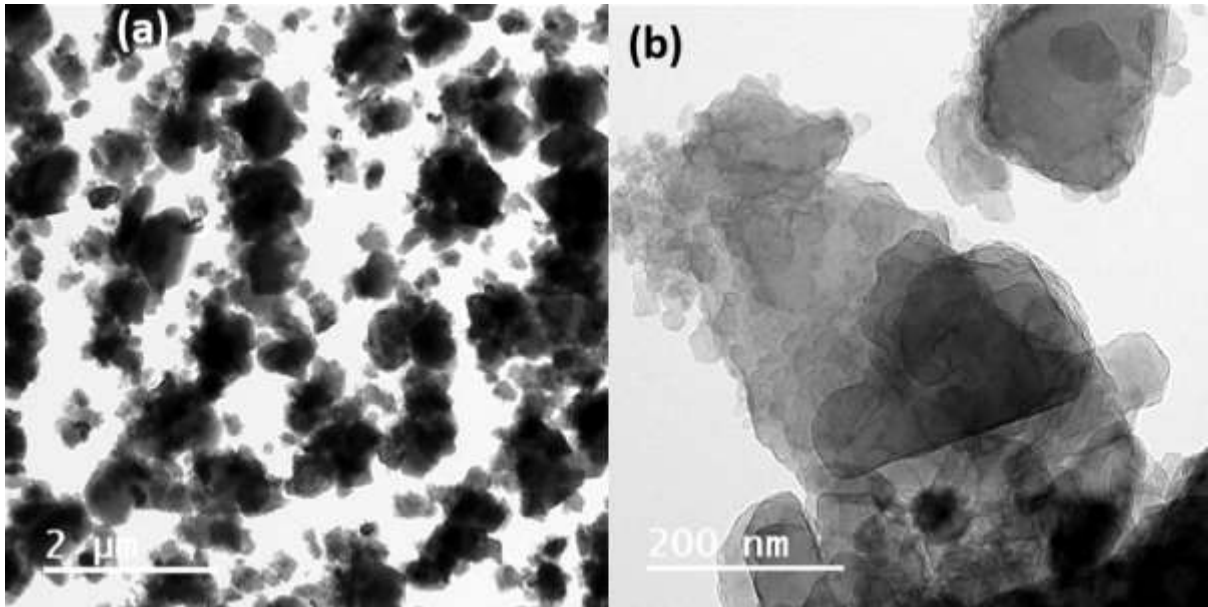
**Figure S2:** (a), (b) and (c) represents the SEM images of aggregated Mg nanoparticles on copper, Nickel and SS substrates at a lower heating rate of 10°C/min



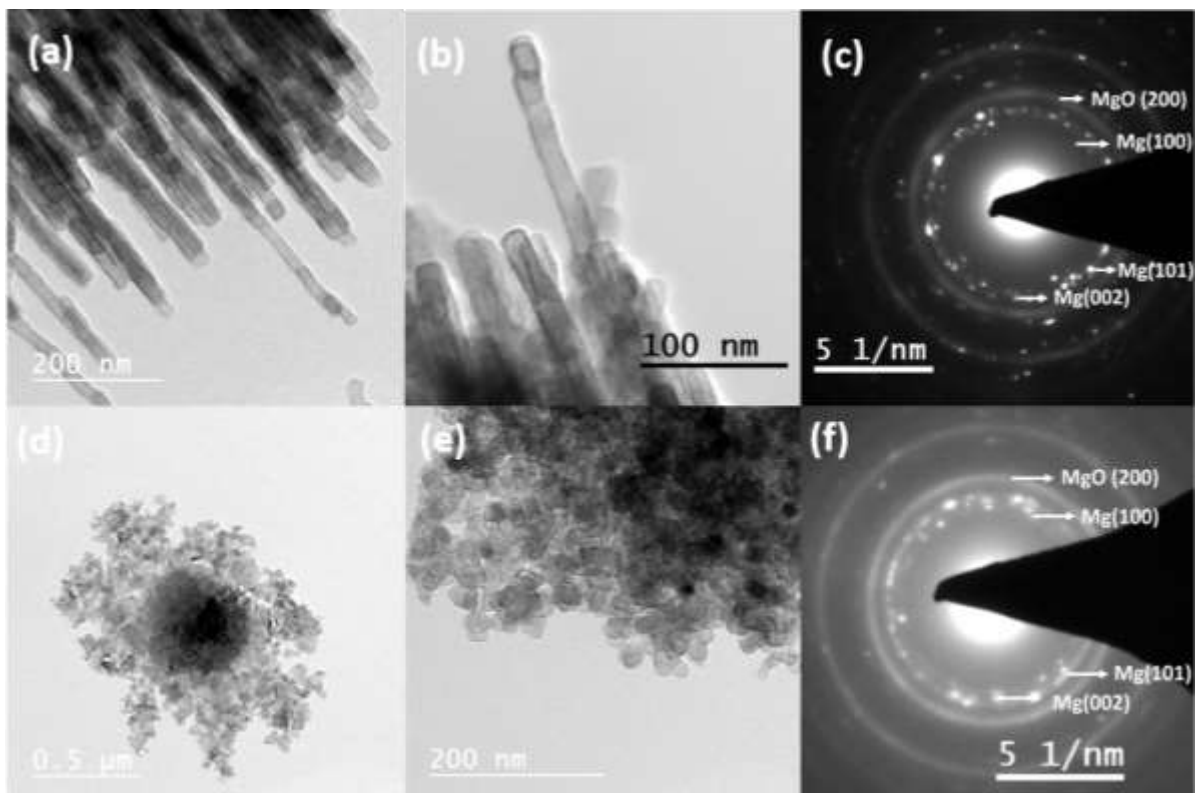
**Figure S3:** (a) and (b) represents the Bright-Field TEM images of Mg nanostructures deposited on a TEM grid at position P2, when the sublimation process is carried out in a test tube.



**Figure S4:** (a) shows the Bright-Field TEM image of MgO film deposited on a TEM grid when the Mg sublimation is done on the quartz tube of OD 8cm (without bottle and test tube) and (b) the corresponding SAED pattern.



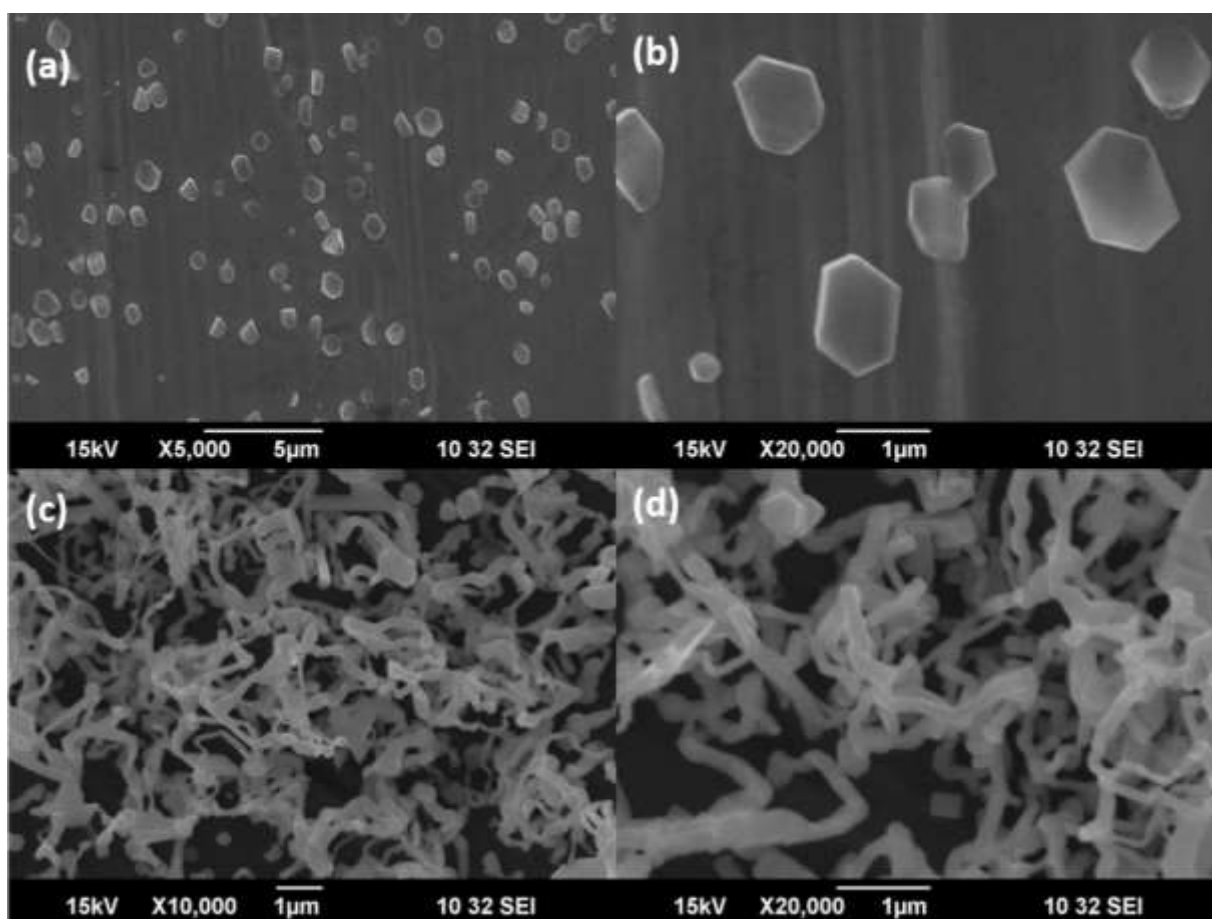
**Figure S5:** (a) and (b) shows the Bright-Field TEM images of melted Mg microstructures at source temperature of 600°C, deposited on a carbon at a substrate position of P1.



**Figure S6:** (a) and (b) shows the Bright-Field TEM images of straight Mg nanowires growing from the microstructures at an evaporation temperature of 600°C, at substrate position P2, (c) the corresponding SAED pattern, (d) and (e) represents the Bright-Field TEM images of Mg nanoparticles, which is formed from Mg microparticles at a substrate position of P3 (evaporation temperature of 600°C) and (f) the corresponding SAED pattern.



**Figure S7:** shows the photograph of copper acetate deposition in the quartz bottle.



**Figure S8:** (a) and (b) shows the SEM images of Mg nanoparticles and (c) and (d) represents the SEM images of Zn nanowires, formed on Stainless steel substrates in a 3cm ND quartz bottle.