

## Modeling the size-dependent melting of metallic nanoparticles relevant for Pb-free soldering

A. Sabbar

Center of Water, Natural Resources, Environment and Sustainable Development .Laboratory of Spectroscopy Molecular Modeling Nanomaterial Materials Water and Environment. Mohammed V University in Rabat, Faculty of Sciences, Ibn Battouta Av., PB 1014, Rabat.



### Abstract

Actually, it is well known that understanding how materials behave at tiny length scales is crucial for developing future nanotechnologies. Indeed, metallic nanoparticles have extensive applications in catalysis, sensors, electronics, and environmental and biomedical fields...

Melting temperature is one of the fundamental properties of materials. In principle, the melting temperature of a bulk material is not dependent on its size. However, as the size of a material decreases toward the nanometer size and approaches atomic scale, the melting temperature scales with the material dimensions.

Studies of melting process and thermodynamic properties (melting temperature and melting enthalpy) of nanoparticles have attracted both the theoretical and experimental interests because of the dramatically different melting behaviors from the bulk materials.

In this work, the nanomaterials size effect on the melting temperature has been discussed for some pure metals such as Sn, Ag and Zn, and the eutectic Sn-Ag-Zn metallic nanoparticles using a thermodynamic approach.

### Biography

Abdelaziz Sabbar has completed his PhD at the age of 28 years from Montpellier University, France. He obtained a postdoctoral thesis at Mohammed University in Rabat, Faculty of Sciences in Physical Chemistry specialty. He is professor in Chemical Department in Faculty of Sciences in Rabat. He has over 30 publications in international Journals.



International Conference on Smart Materials and Nanotechnology | July 23-24, 2020

**Abstract Citation:** A.Sabbar, Modeling the size-dependent melting of metallic nanoparticles relevant for Pb-free soldering, Smart Materials Congress 2020, 2nd International Conference on Smart Materials and Nanotechnology, July 23, 2020 | Webinar, Page 9