

A new secure database using Grid technologies

A secure database was developed through a collaboration of NTT Neomeit Corporation using Gfarm file systems developed by AIST. Main features of the secure database are 1) Each record of the database is chopped into very small (several bytes) pieces and they are distributed over the Gfarm file systems in different places. 2) When an operator uses the database it is reconstructed temporarily on a RAM disk from the Gfarm file systems, so the data automatically disappear at an instance of system shutdowns. 3) Meta-data which contains locations of the divided pieces are encoded and decoded solely by authorized secret keys.

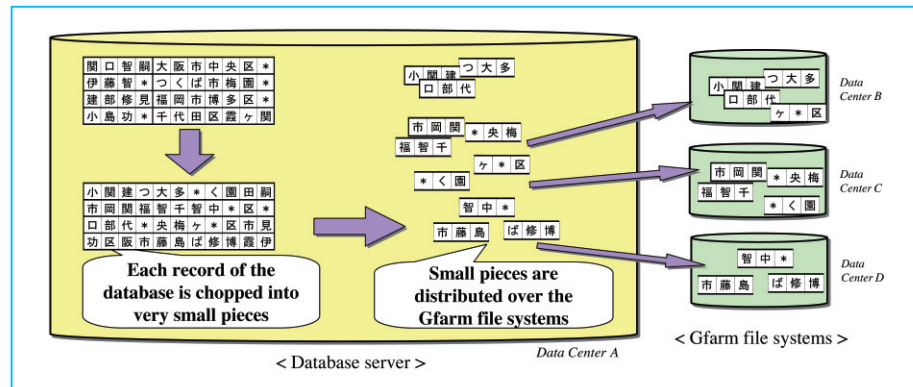


Figure: Overview of a secure database using Gfarm.

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Novel melting method for lightweight hydrogen adsorbing alloy

In the past several years there has been increasing interest in lightweight hydrogen absorbing alloys containing Mg and Ca. However, Mg and Ca that have low boiling points and high vapor pressure readily evaporate when they are synthesized by the melting method. It is difficult to get an alloy with a target composition because of the loss of Mg during the melting. We have developed a method that uses a helium gas mixture as an atmosphere during melting. Using this novel method, we successfully synthesized alloys with the composition that we expected.

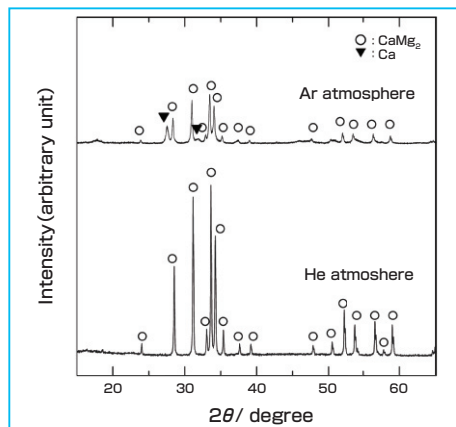


Figure: XRD profiles of CaMg₂ prepared under Ar (conventional method) and He (this work).



Photo: 5 mas % class Ca based Laves phase hydrogen adsorbing alloy prepared by the new melting method.

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