A Novel Process for Ceramics Forming

Kimiyasu Sato
Advanced Manufacturing Research Institute

E-mail:
sato.kimiyasu@aist.go.jp

AIST TODAY Vol.5, No.7(2005)
p.36-37

AIST developed a novel process for ceramic forming in collaboration with NGK Insulators Ltd. In the process, less than half amount of organic binder was required compared to the conventional processes. A monolayer of organic binder, which is chemically bonded to surfaces of ceramic particles, was formed. The monolayer acts as a bridge for merging of whole particle assembly. The efficient monolayer use of organic binder reduces the amount of binder utilized, while providing strong bonding between particles due to chemical reactions.

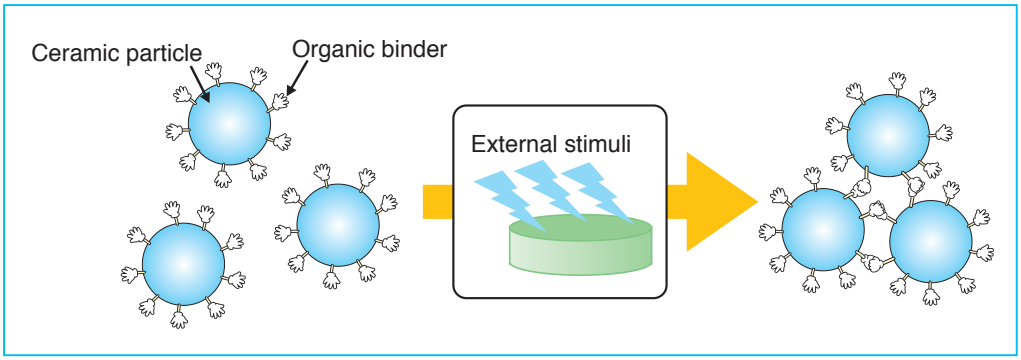

Figure: General idea of the novel process for ceramic forming.

Absolute frequency measurement of an acetylene-stabilized laser

Feng-Lei Hong
Metrology Institute of Japan

E-mail:
f.hong@aist.go.jp

AIST TODAY Vol.5, No.7 (2005)
p.38-39

To upgrade the capacity of existing optical fiber networks, technologies like dense wavelength-division-multiplexing (DWDM) are advancing rapidly. The management and control of optical frequencies in telecommunication are becoming more and more important. We have measured the absolute frequency of an acetylene-stabilized laser at 1.5 μm using a femtosecond optical frequency comb. The measured result was adopted by the International Committee for Weights and Measures (CIPM) for determining the absolute frequency of the optical frequency standard.

Ref.: F.-L. Hong et al., Opt. Lett. Vol. 28, No. 23, pp. 2324-2326 (2003).

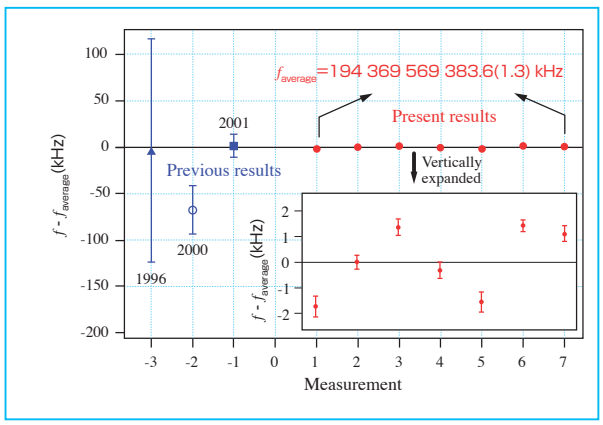

Figure: Absolute frequency and repeatability of the laser locked on the P(16) transition of $^{13}C_2H_2$.