Effect of Sonication and Grinding on the Structure of Amorphous Carbon

Prabal Dasgupta[a], S. Chakraborty[b], Chitra Samanta[c], [a]*C.S.S. Dept.*. [b]*MLS Unit, Indian Association for the Cultivation of Science, Kolkata.* [c]*Jadavpur university, Kolkata, India.* E-mail: prabaldasgupta@hotmail.com

This work reports that on prolong sonication (3hr) and on grinding (30min) the structure of freshly prepared hydrogenated amorphous carbon obtained by the pyrolysis of benzene changes considerably.

The d_{002} line particularly changes from 3.28 A° to 3.81A° (sonication) and to 3.65A° (grinding), evident from electron diffraction studies. d_{002} line is also broadened in both the cases. FTIR studies reveal that on both the cases sp^3CH_2 (sym) and sp^3CH_2 (asym) streching modes at 2920 and 2850 cm^{-1} respectively shrinks, suggesting depletion of aliphatic hydrogen. On the other hand 1600 cm^{-1} band assigned to aromatic ring streching becomes more prominent in both the cases, suggesting increase in aromatic carbon content.

Keywords: electron diffraction, hydrogenated amorphous carbon, sonication