1046-Z1-2116 **Rika Paul*** (rika.paul@famu.edu), Florida A&M University, Department of Mathematics, Jackson Davis Hall, Room 314, Tallahassee, FL 32307, **Rohini Mankee**, Florida A&M University, Department of Mathematics, Jackson Davis Hall, Room 314, Tallahassee, FL 32307, **G. Dale Wesson** (garlen.wesson@famu.edu), Florida A&M Univesity, Biological and Agricultural Systems Eng, 307 North Perry Paige, Tallahassee, FL 32307, and **Desmond Stephens** (desmond.stephens@famu.edu), Florida A&M University, Department of Mathematics, Jackson Davis Hall, Room 314, Tallahassee, FL 32307. *Calculating the void fraction of carbon foam using a tetrahedron model.* Preliminary report.

Carbon foam has become increasingly important due to its low density; high porosity or void fraction ($75 - 90\%$) and high specific thermal conductivity. This study develops a model for the creation of air bubbles in the carbon-foaming process. Currently, reliable and robust models are not readily available through of-the-shelf Computer Aided Design (CAD) software. Our model provides a low cost method that may be useful for testing thermal properties of graphite foam. This model is based on a tetrahedron which has spheres centered at each of its vertices. These spheres represent the bubbles that are produced during a carbon-foaming process. Void fraction calculations are done before and after sphere intersections. For a fixed distance between bubbles (a), sphere radii (R) are allowed to increase. Void fractions are then calculated for three cases: (1) before the spheres intersect, (2) at the point the spheres begin to intersect and (3) after intersection. This calculation is done analytically until $R/a = 0.5$. For $R/a \geq 0.5$, void fractions are calculated using the Monte Carlo Method. The graphical relationship developed here provides a model that can be used to predict the void fraction of the graphite foam for a given ratio R/a. (Received September 18, 2008)