**A Reaction Rate Model for Detonation of PBX-9502**[1] JUN  CHEN
— People always try to make macroscopic phenomenological reaction rate model
to simulate detonation phenomenon. But these models have the limitation whose
model parameters are different with those got by experiments. In this paper, a
simple reaction rate model of PBX-9502 has been proposed using Lagrange analysis
method for high explosives. With this model, longitudinal structure of reaction zone
of PBX-9502 was obtained. Then the results of our model are compared with ignition
&growth model. From the analyzing the detonation reaction rate with pressure (p)
and reaction fraction of mass ($\lambda$), we describe the reaction rate equation of PBX-9502
detonation process. We use nonlinear optimization method to get the parameters
(z, x, G) of the above-mentioned reaction rate equation. Coupling this equation
into DYNA2D, we simulate the shock initiation process that one centimeter Kel-F
impacts PBX-9502 at a speed of 3970m/s. We also compare our results with the
ignition&growth model. These two models can describe the detonation reaction zone
very well.

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