1037-35-55 **Wai Yuen Chan*** (`wchan@semo.edu`), Department of Mathematics, Southeast Missouri State University, Cape Girardeau, MO 63701. *Blow-up of the Solution of Degenerate Quasilinear Parabolic Problems with a Nonlinear Reaction Term.*

Let $T \leq \infty$, b be a positive number, m be a positive number greater than 1, and q be a nonnegative number. Existence and uniqueness of a classical solution are studied for the following degenerate quasilinear parabolic problem,

$$x^q u_t = (u^m)_{xx} + bf(u) \text{ in } (0,1) \times (0,T), \tag{1}$$

$$u(x,0) = u_0(x) \text{ in } [0,1], \ u(0,t) = 0 = u(1,t) \text{ for } t \in (0,T), \tag{2}$$

where $u_0(x)$ is a positive function for $0 < x < 1$, $u_0^m(x) \in C^{2+\alpha}([0,1])$ for some $\alpha \in (0,1)$, $u_0(0) = u_0(1) = 0$, and $f(u)$ is a given function such that $f(0) \geq 0$ and $f'(u) \geq 0$ for $u \geq 0$. Furthermore, a criterion for u to blow up in a finite time is given. (Received January 17, 2008)

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