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Baoquan Yuan* (bqyuan@hpu.edu.cn), College of Mathematics and Informatics, Henan Polytechnic University, Jiaozuo, Henan 454000, Peoples Rep of China. *The regularity of weak solutions to magneto-micropolar fluid equations.*

In this paper, we study the regularity of weak solutions and the blow-up criteria of smooth solutions to the magneto-micropolar fluid equations in \mathbb{R}^3 . We obtain the classical blow-up criteria for smooth solutions (u, ω, b) , ie. $u \in L^q(0, T; L^p(\mathbb{R}^3))$ for $\frac{2}{q} + \frac{3}{p} \leq 1$ with $3 < p \leq \infty$, $u \in C([0, T]; L^3(\mathbb{R}^3))$ or $\nabla u \in L^q(0, T; L^p)$ for $\frac{3}{2} < p \leq \infty$ satisfying $\frac{2}{q} + \frac{3}{p} \leq 2$. Moreover, our results indicate that the regularity of weak solutions is dominated by the velocity u of fluid. In the end-point case $p = \infty$, the blow-up criteria can be extended to more general spaces $(u, \omega, b) \in L^2(0, T; \dot{B}_{\infty, \infty}^0(\mathbb{R}^3))$ or $\nabla(u, \omega, b) \in L^1(0, T; \dot{B}_{\infty, \infty}^0(\mathbb{R}^3))$. (Received July 28, 2007)