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Magnetodielectric consequences in double perovskite Pr_2CoMnO_6 J.H. ZHANG, Department of Physics, National Sun Yat-Sen University, Kaohsiung 804, Taiwan, S. MUKHERJEE, Department of Physics, National Sun Yat-Sen University, Kaohsiung 804, Taiwan., H.C. WU, Department of Physics, National Sun Yat-Sen University, Kaohsiung 804, Taiwan, J.Y. LIN, Institutes of Physics, National Chiao Tung University, Hsinchu 30010, Taiwan, A.N. VASILIEV, Department of Low temperature Physics, Moscow State University, Moscow 119991, Russia, H.D. YANG, Department of Physics, National Sun Yat-Sen University, Kaohsiung 804, Taiwan — We report an intriguing colossal dielectric and magnetodielectric (MD) response on double perovskite Pr_2CoMnO_6(PCMO) system. At the highest applied magnetic field 9T, the giant dielectric constant around $T_m \sim 175$ K is enhanced almost $\sim 22\%$ (at 10 kHz frequency) compare with that at zero field. The observed positive MD effect is considered to be associated with the direct consequence of negative magnetoresistance changes ($\sim$ -15% at 175 K). Concomitantly, a pronounced ferromagnetic ordering is observed near $T_c \sim 175$ K coinciding with T_m of $\varepsilon\prime(T)$. These experimental results suggest that the magnetoresistive MD response is very much conditioned by magnetic property of PCMO.

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