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Brilliant CoC nanomagnets: highly magnetocrystalline anistropy for potential applications AHMED EL-GENDY, TURKI ALMUGAITEEB, EVERETT CARPENTER, None — No doubt that the development of novel materials and their understanding on a smaller size scale is still a challenging issue at the basis of progress in many areas of materials science. This is almost entirely true in the development of new magnetic materials for a various types of vital applications. Recently the focus has moved from the microcrystalline to the nanocrystalline magnetic regime. The most common amorphous and nanocrystalline magnetic materials are classified to be one of either magnetically hard (a quite larger coercivity) or soft (a material with a very smaller coercivity) materials. In the work at hand we are concerning the hard magnetic CoC nanopareticles. This material shows a mono-dispersed, stable against air environment and larger magnetocrystalline anisotropy as well as larger coercivty. In addition, the mono-dispersed and small particle size led to getting a Curie temperature much smaller than the related bulk materials. Based on the relation between the Curie temperature and the number of atoms, the shape of the particles can be determined. Therefore, the CoC nanomagnes with impressive magnetic properties open the root for various essential applications such as permanent magnets, magnetic sensors and contrast agent for MRI diagnostic tools.

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