Two central simple algebras, $A_1$ with center $k_1$ and $A_2$ with center $k_2$, are said to be forms of each other if they become isomorphic after extensions of scalars, that is there exists a field $K$ which extends $k_1$ and $k_2$ and $A_1 \otimes_{k_1} K \cong A_2 \otimes_{k_2} K$ as $K$ algebras. Using this terminology, one knows that any $k$-central simple algebra and in particular $M_n(k)$ admits a division algebra form.

Let $G$ be any finite group. We apply tools from PI theory (and in particular generic constructions) in order to characterize the finite dimensional $G$-simple algebras over an algebraically closed field of characteristic zero which admit a $G$-graded division algebra form. Joint work with Yaakov Karasik.