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**Gary Chartrand, Linda Lesniak\*** (llesniak@drew.edu), **Donald VanderJagt** and **Ping Zhang**. *Recognizable Colorings of Graphs*.

Let  $G$  be a connected graph and let  $c : V(G) \rightarrow \{1, 2, \dots, k\}$  be a coloring of the vertices of  $G$  for some positive integer  $k$  (where adjacent vertices may be colored the same). The color code of a vertex of  $G$  (with respect to  $c$ ) is the ordered  $(k + 1)$ -tuple code  $(v) = (a_0, a_1, \dots, a_k)$ , where  $a_0$  is the color assigned to  $v$  and for  $1 \leq i \leq k$ ,  $a_i$  is the number of vertices adjacent to  $v$  that are colored  $i$ . The coloring  $c$  is called recognizable if distinct vertices have distinct color codes and the recognition number  $rn(G)$  of  $G$  is the minimum positive integer  $k$  for which  $G$  has a recognizable  $k$ -coloring. Recognition numbers of complete multipartite graphs are determined and characterizations of connected graphs of order  $n$  having recognition numbers  $n$  or  $n - 1$  are established. It is shown that for each pair  $k, n$  of integers with  $2 \leq k \leq n$ , there exists a connected graph of order  $n$  having recognition number  $k$ . Recognition numbers of cycles, paths and trees are investigated. (Received July 01, 2008)