In 1987, Hanson and Toft introduced the following question drawing from both saturation numbers and Ramsey numbers:

Let $H_1, \ldots, H_k$ be graphs. What is the minimum number of edges in an $n$-vertex graph $G$ such that 1) $G$ has a $k$-edge-coloring what does not contain a monochromatic copy of $H_i$ in color $i$ for any $i$, and 2) for every edge $e \in E(G)$, every $k$-edge-coloring of $G + e$ contains a monochromatic coloring of $H_i$ in color $i$ for some $i$?

A rainbow edge coloring of a graph $H$ is an edge coloring such that each edge receives a distinct color. In this talk we introduce an anti-Ramsey variation of the Hanson-Toft question: For a graph $H$, what is the minimum number of edges in an $n$-vertex $t$-edge-colored graph $G$ that does not contain a rainbow copy of $H$, but the addition of any edge in any color to $G$ completes a rainbow copy of $H$. We call this number the $t$-rainbow saturation number of $H$, denoted $\text{sat}_t(n, H)$.

We present a variety of results demonstrating some surprising behavior of rainbow saturation numbers. In particular, we will show that for $t \geq \binom{k}{2}$, the $t$-rainbow saturation number $\text{sat}_t(n, K_k)$ lies between $\frac{n \log n}{\log \log n}$ and $n \log n$. (Received February 24, 2015)