Embedding $\ell_\infty$ into the Dual Space of Nuclear Operators on Certain Banach Spaces.

We give sufficient conditions on a Banach space $X$ which ensure that $\ell_\infty$ embeds in $\mathcal{L}(X)$, the space of all operators on $X$. We say that a basic sequence $(e_n)$ is quasisubsymmetric if it dominates all of its subsequences, and for every sequence $(I_n)$ of intervals of positive integers with $\max(I_n) < \min(I_{n+1})$ there exists a sequence $(m_n)$ with $m_n \in I_n$ such that $(e_{m_n})$ dominates $(e_{k_n})$ for all $(k_n)$ satisfying $k_n \in I_n$. One of our main results is that if $X$ is a Banach space having a seminormalized quasisubsymmetric basis, such that $X^*$ has the approximation property. Then $\ell_1 \hookrightarrow \mathcal{N}(X)$ complementably. (Received October 01, 2004)