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Abstract for an Invited Paper  
for the MAR10 Meeting of  
the American Physical Society

**Earle K. Plyler Prize for Molecular Spectroscopy Talk: Laser Ablated Metal Atom Reactions to Form Novel Molecules**  
LESTER ANDREWS, University of Virginia

A wide variety of laser-ablated metal atom reactions in solid rare gas matrices at cryogenic temperatures to form novel product molecules will be presented. These will include the ion-pair molecule  $\text{Li}^+\text{O}_2^-$ , the dialane molecule  $\text{Al}_2\text{H}_6$ , the thorium methyldene  $\text{CH}_2=\text{ThH}_2$ , the thorium borylene  $\text{FB}=\text{ThF}_2$ , the uranium methyldiyne  $\text{HC}\equiv\text{UF}_3$ , the nitride  $\text{N}\equiv\text{UF}_3$ , and other recently prepared uranium bearing molecules.