

# Crystals

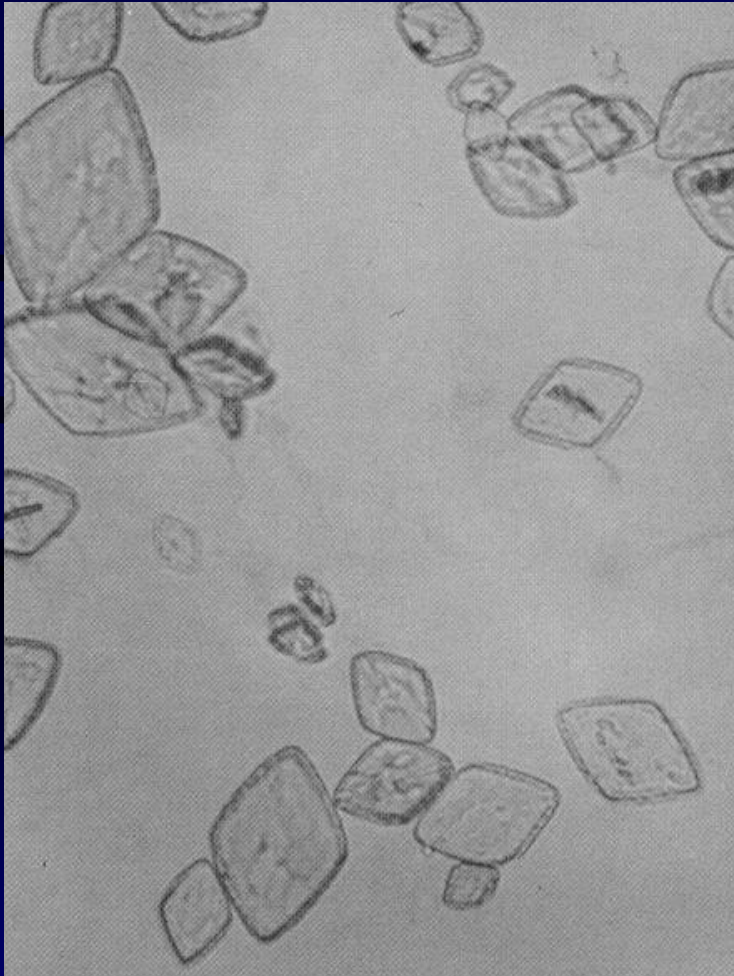
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**1998**

# Urinary Crystals: Uric Acid



## *Description:*

- flat, six-sided, diamond-shaped structures

## *Clinical Significance:*

- usually none
- may suggest elevated serum uric acid, as in gout
- persistent abundance in urine together with evidence of renal epithelial injury may suggest the presence of uric acid calculus.

# Urinary Crystals: Amorphous Urate



*Urate crystal*

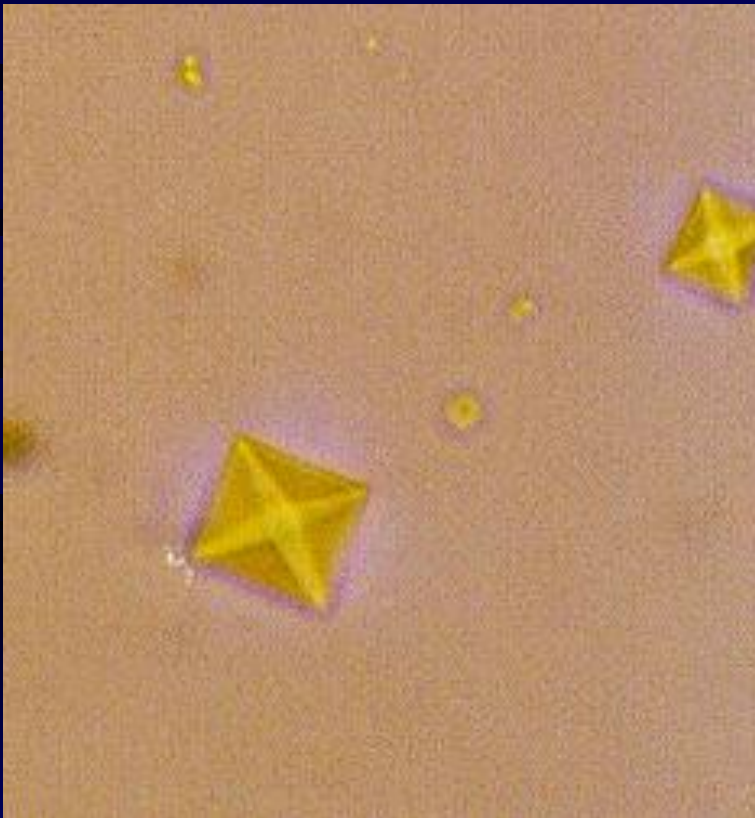
## *Description:*

- fine granular crystalline precipitate in the background
- differentiate from cellular debris or protein deposit by dissolving in heat.

## *Formation:*

- found in acid urine
- particularly after a high protein diet

# *Urinary Crystals:* Calcium oxalate



## *Description:*

- transparent , diamond or small concave shaped

## *Pathological Significance*

- none
- presence suggests an acid urine
- seen after diet containing oxalate eg. Tomatoes, spinach, apples, oranges, garlic, rhubarb & asparagus

# Urinary Crystals: Calcium oxalate



*octahedral*

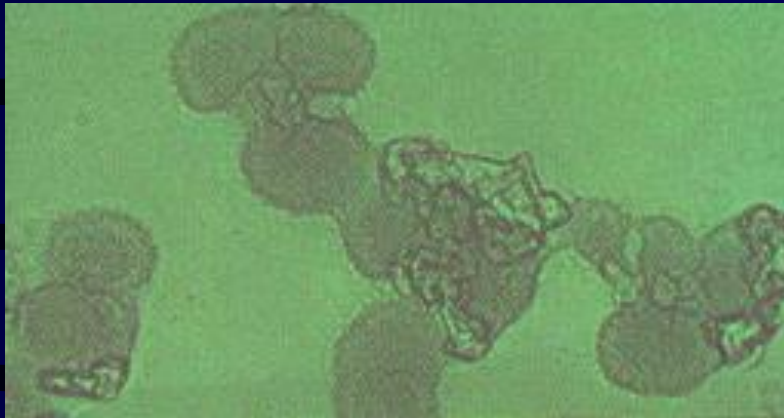


*dumbell*

Calcium oxalate crystals appear in the urinary sediment in two principal forms:

- octahedral or envelope, and
- dumbell

# Urinary Crystals: Calcium phosphate

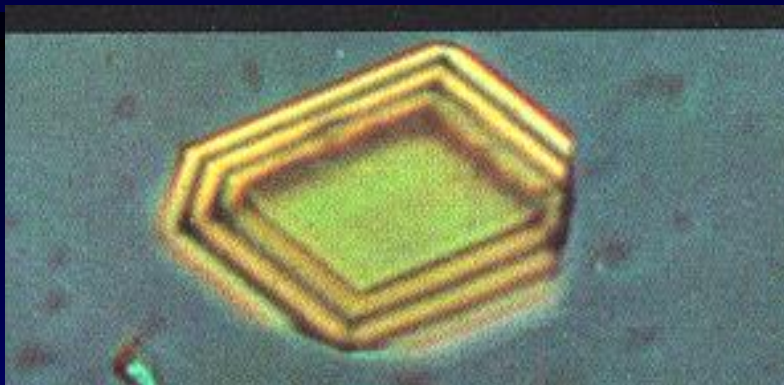


## *Description:*

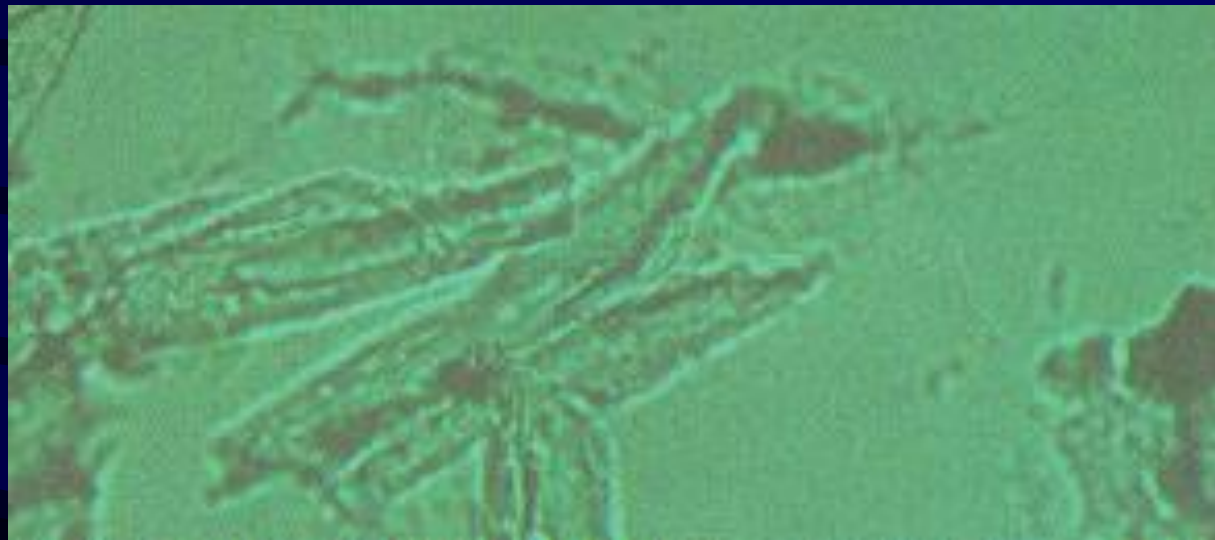
- rosette
- lamella forms

## *Clinical Significance:* associates with:

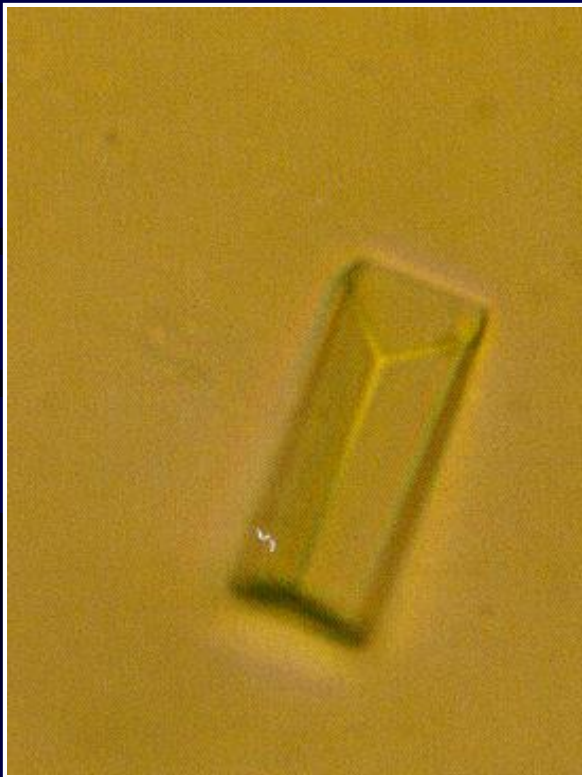
- urine stasis
- benign prostatic hypertrophy
- chronic cystitis
- paraplegia



# *Urinary Crystals:* Magnesium ammonium phosphate



# *Urinary Crystals:* Triple Phosphate



## *Description :*

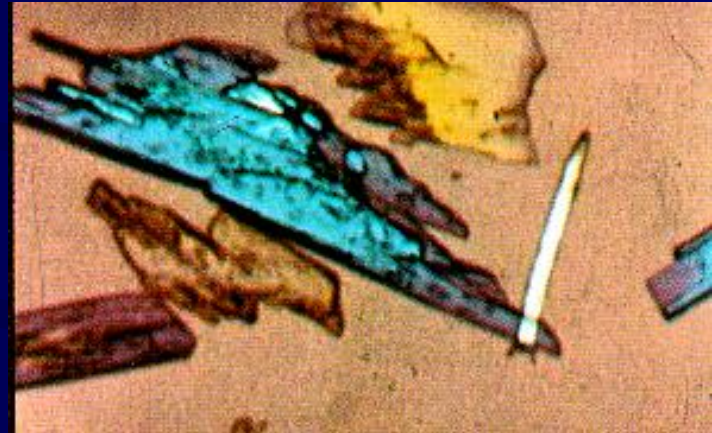
- Elongated, transparent, often rectangular or diamond-shaped, 'coffin-lid'

## *Clinical Significance:*

- little or no pathological significance
- their presence usually suggest an alkaline urine.



# *Urinary Crystals:* Triple Phosphate



Triple phosphate crystals are found in alkaline urine in two forms:

- prisms, and
- feathery crystals.

# Urinary Crystals: Cystine



## *Description:*

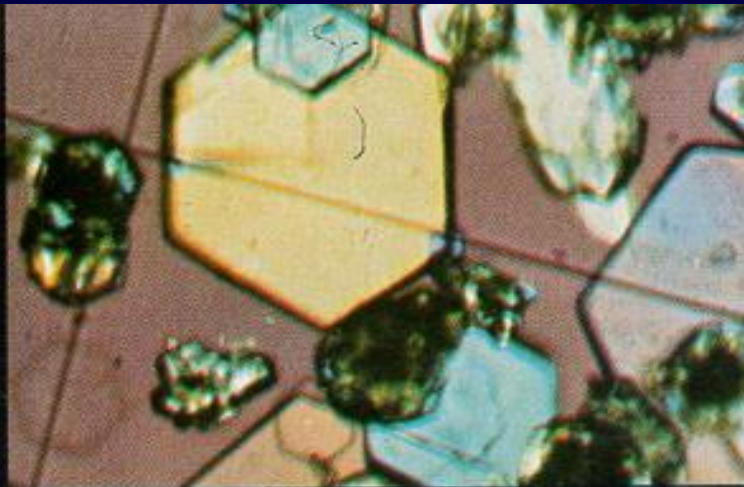
- colourless
- hexagonal plates
- surface appears pitted

## *Clinical Significance*

- cystinosis

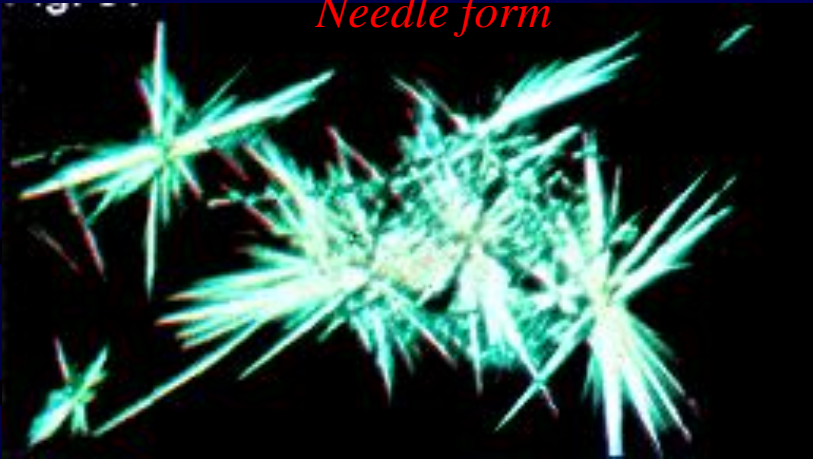
## *Differential Identification:*

- insoluble in acetic acid, alcohol, acetone & ether.
- soluble in acid and ammonia



# Urinary Crystals: Tyrosine

*Needle form*

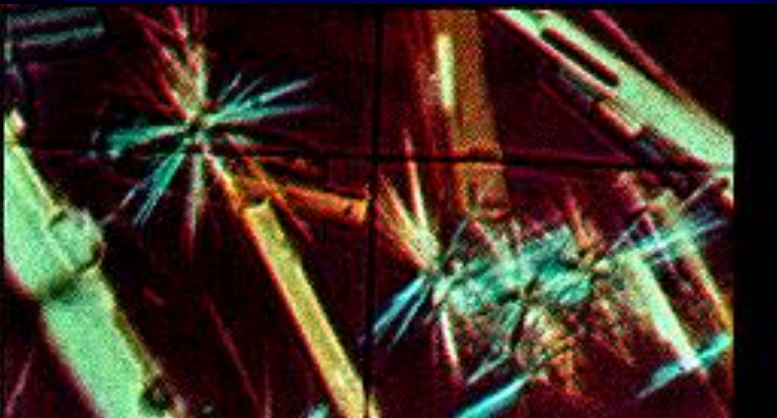


## *Description:*

- appear in acid urine as sheaves of highly refractive needles.

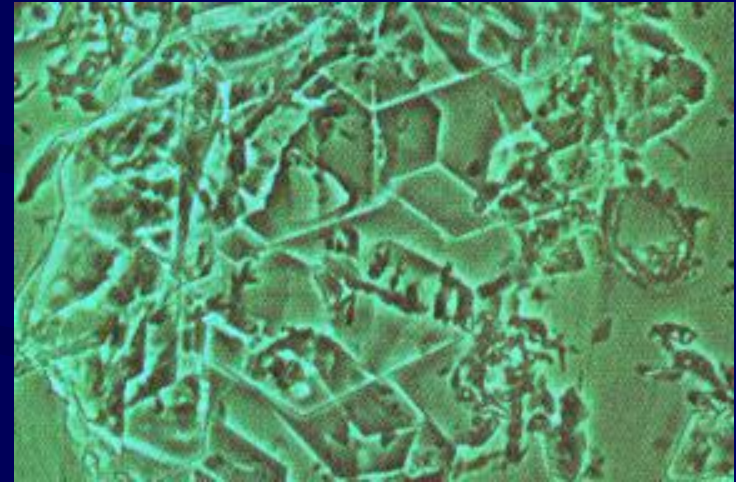
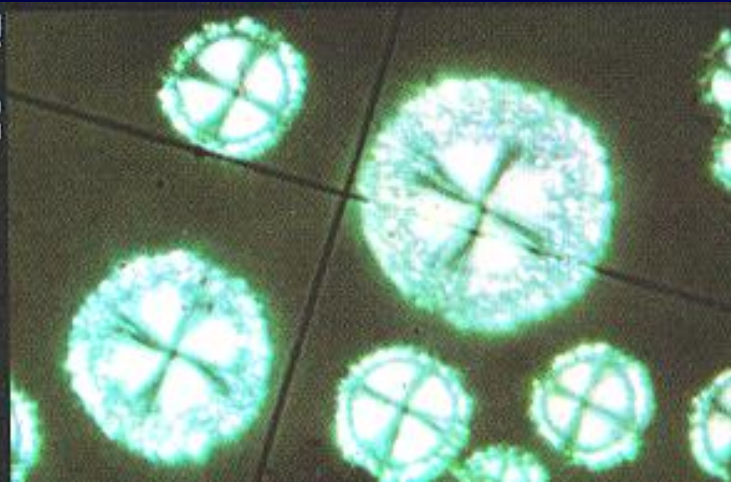
## *Clinical Significance:*

- tyrosine and leucine crystals usually appear in the urine together generally as a result of severe liver disease.



*Tabular form*

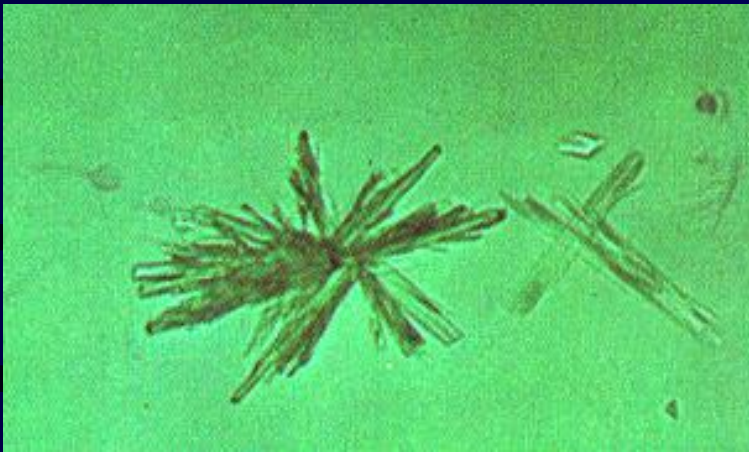
# Urinary Crystals: Leucine



## *Description:*

- highly refractive
- may appear in two forms:
  - polyhedral
  - spherules

# Urinary Crystals: Hippuric Acid



## *Description:*

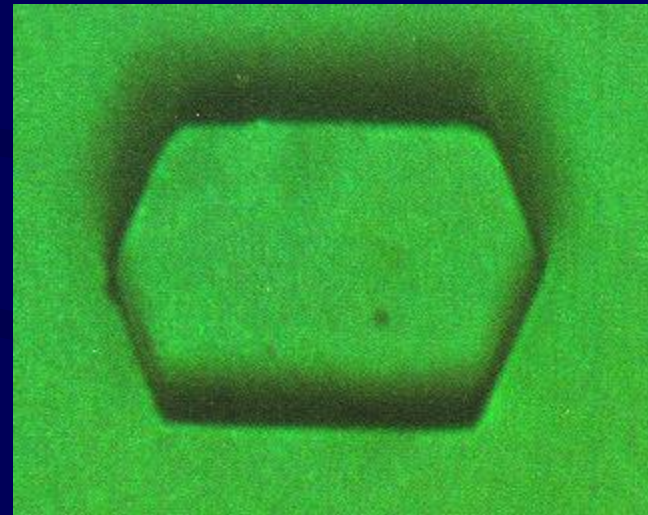
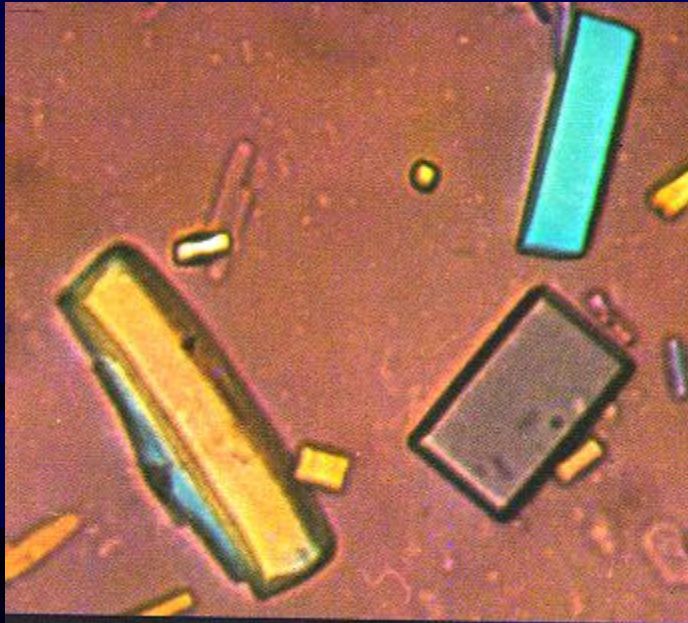
- stained yellow -brown
- stellate clusters of needles, or
- elongate prisms.



## *Clinical Significance:*

- rarely seen in urine
- usually of no clinical significance

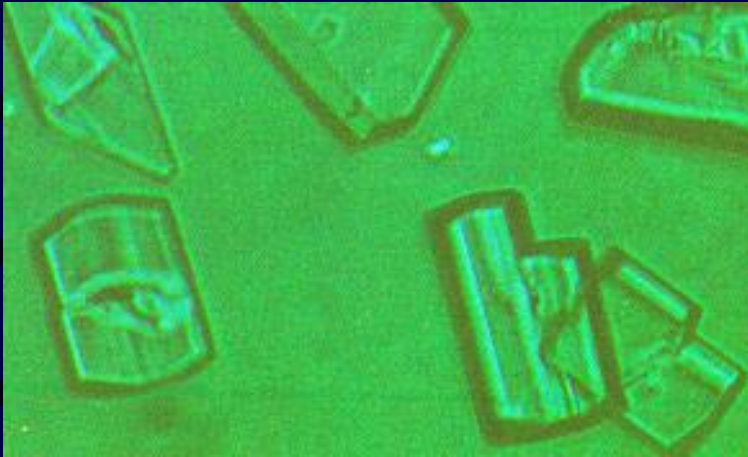
# Urinary Crystals: Creatine



*Description:* pseudo-hexagonal form

*Clinical Significance:* rarely seen in normal adults. Hypercreatinemia are associated with destruction of muscle cells, such as muscular dystrophies, diffuse myositis, myasthenia gravis.

# Urinary Crystals: Cholesterol



## *Description:*

- irregularly or regularly notched, transparent plates

## *Clinical Significance:*

- rarely found in urine
- may be seen in chyluria resulting from abdominal or thoracic obstruction to lymph drainage with retrograde lymph flow and rupture of the lymphatic vessels in the renal pelvis.

